PERIODICAL ROOM
GENERAL LIBRARY
UNIV. OF MICH.
MAY 19 1930

Teachers College RECORD

May 1930

CONTENTS

The State and Education in Europe . *I. L. Kandel* 721

A Five-Year Study of Nutrition Teaching in the Fifth and Sixth Grades . . *Mary Swartz Rose* 733

Implications of Recent Rural Surveys for the Rural School *Edmund De S. Brunner* 755

Opportunities in Vocational Guidance *Harry Dexter Kitson* 764

A Study of the Teachers College Students Who are Regularly Employed . . *Roy N. Anderson* 773

A Possible Scheme of Coördination in Education for Homemaking (*continued*) . *Mathilde C. Hader* 778

Abstracts of Recent Research in Cookery and Allied Subjects: IV. Vegetables and Fruits *Victoria Carlsson* 791

New Studies in Education 812

Teachers College in the News 817

College and Alumni Notes 831

BUREAU OF PUBLICATIONS

TEACHERS COLLEGE COLUMBIA UNIVERSITY

$2.50 a Year *35 Cents a Copy*

TEACHERS COLLEGE RECORD

VOL. XXXI, No. 8 MAY, 1930

WILLIAM F. RUSSELL, *Editor*
Dean of Teachers College

CLYDE J. TIDWELL, *Managing Editor*
Director, Bureau of Publications

THE TEACHERS COLLEGE RECORD is issued eight times a year, monthly except June, July, August, and September. The subscription price is $2.50 per year; foreign postage, 50 cents; Canadian postage, 30 cents. Single numbers are 35 cents each, postpaid.

Publication office, Federal and 19th Streets, Camden, N. J., and 525 West 120th Street, New York City. Editorial and general offices at the latter address. Printed in the United States of America.

Entered as second class matter March 17, 1926, at Post Office at Camden, N. J., under the Act of March 3, 1879.

Copyright, 1930, by TEACHERS COLLEGE, Columbia University.

A test in time saves nine

SMITH-REEVE-MORSS

EXERCISES AND TESTS

One of these tests given in time will very often save nine failures in your class. They diagnose the specific weaknesses of each pupil. They provide remedial drill to overcome these weaknesses. They save much time and labor.

In Algebra through Quadratics $0.60

In Junior High School Mathematics, Parts I and II each $0.48

In Plane Geometry $0.48

Boston GINN AND COMPANY New York

Chicago Atlanta Dallas Columbus San Francisco

ADVERTISEMENTS

VOLUME XXXI NUMBER 8

Teachers College
RECORD

May 1930

THE STATE AND EDUCATION IN EUROPE

By I. L. KANDEL

Professor of Education and Associate, International Institute of Teachers College

THE permanent question in education has always been "Who shall have the control of the education of the child?" The question is no nearer settlement to-day than it was when first broached from the point of view of political philosophy by Plato and Aristotle. These two philosophers already had before them the *laissez faire* practice of the Athenians, up to the period of military training, and the state-controlled system of the Spartans. Into the theoretical solutions of Plato and Aristotle it is not necessary to enter, but Aristotle's statement is pertinent to the topic under consideration. "Of all things that I have mentioned," he said, "that which contributes most to the permanence of constitutions is the adaptation of education to the form of government" (*Politics*), and "We laid it down that the end of politics is the highest good; and there is nothing that this science takes so much pains with as producing a certain character in the citizens, that is, making them good and able to do fine actions" (*Ethics*).

To these statements later developments have had little to add. During the medieval period education was controlled by the Church and from time to time decrees were issued requiring parish priests to provide and supervise elementary education; secondary education was definitely controlled and supervised by the bishops in each diocese. Attempts were made from time to time by individuals to contest

this supervision and by city councils to provide their own education, but these protests against an established doctrine failed. The Reformation did not result in the elimination of the control of education by the ecclesiastical authorities but in the development of a partnership between them and the State, for education, like religion, was subject to the doctrine *cujus regio, ejus religio.*

This partnership continued especially in the field of elementary education in most countries down to the twentieth century, but the State gradually assumed a larger share of control which increased with the emergence of the political concept of nationalism.

The theorists of the French Revolution enunciated the principle that the child belongs to the State, and Condorcet, while he accepted this principle, attempted to divorce education from politics by advocating an autonomous system of education wholly controlled by the teaching profession. Napoleon grasped the Revolutionary principle and in 1808 issued a decree to the effect that "No school, no establishment of instruction whatsoever, may be set up outside the Imperial University and without the authorization of its head." This principle Napoleon had already justified three years earlier when he wrote "Of all political questions that (of education) is perhaps the most important. There cannot be a firmly established political state unless there is a teaching body with definitely recognized principles. If the child is not taught from infancy that he ought to be a republican or a monarchist, a Catholic or a free-thinker, the State will not constitute a nation; it will rest on uncertain and shifting foundations; and it will be constantly exposed to disorder and change." [1] These principles have survived in French education down to the present, but for somewhat different reasons.

The same principle was inherent in the definitive organization of the Prussian system of education before 1800. The *Allgemeine Landrecht* of 1794 provided that "Schools and universities are state institutions charged with the instruction of youth in useful information and scientific knowledge. Such institutions may be founded only with the knowledge and consent of the State." The call to patriotism and nationalism that followed the German defeat at Jena helped to give further justification to this principle of State control over education, which received a more intensive application after 1870 with

[1] See Reisner, E. H. *Nationalism and Education since 1789*, p. 35. The Macmillan Company, 1922.

the growth of political, military, and economic nationalism in Germany. The practical interpretation found its rationalization in the philosophy of Fichte and Hegel and later in the works of the nationalist historians and propagandists. The State represents the realization of reason and justice in social life; in a word the State alone, as an idealized entity above the individuals that make it up, has a mission and a destiny to fulfill and has, therefore, the right to organize that education that will realize its *Kultur*.

The principle of State control of education never took a real hold on English thought. There were among early socialists a few, like Robert Owen and William Godwin, who advocated the organization and provision of education by the State, but on the whole conservatives were opposed to it and liberals were afraid of it. Public education developed slowly and expanded by easy stages after the first grant was made for educational purposes in 1833. The result was the creation of vested interests which had to be conserved when something approaching a national system of education began to be developed after 1902, and a further result has been the constant fear of State encroachment in the process of education.

There thus survived into the twentieth century two main principles underlying the relation of the State to education: First that the State has a right to a virtual monopoly in education, including complete control over all types of education, public and private; and second the doctrine of *laissez faire* with the implication that the State may step in to supply deficiencies. Some changes have, however, taken place in the post-War period.

France may still be cited as the best example of centralization or State control in education. Here the Napoleonic principle survives but is beginning to be questioned. The reasons underlying this principle have been increased during the Third Republic. Centralization is justified not merely on cultural grounds but as the best protection against aggression both within and without and the best guarantee of national solidarity. It is not often realized that the French republic still lives in fear of the restoration of a monarchy, a fear which may be groundless but which still plays an important part in French life to-day. The restoration of the Church to political power is also an eventuality against which centralization in education is regarded as a protective safeguard despite the law against Associations passed in

1904. Fear of the development of a caste system is another element that is employed to justify State control that will hold the balance between classes and provide opportunities for the emergence of talent. Bureaucratic control of educational administration is, from another point of view, regarded as the soundest guarantee of efficiency. Hence, a system of organization in which almost every detail is controlled and prescribed by the Ministry of Public Instruction and carried out by officials directly or indirectly responsible to it. By the time the details of administration have been exhausted by the bureaucracy, so little is left for local school committees, which have a place in the scheme of organization, that many refuse to function. The opening and closing of schools, the provision of a large share of the funds, the training and certification of teachers, the approval of textbooks, curricula, and courses of study, and the standards of the examinations with which the career of every Frenchman is paved—all these, the externa and the interna, belong in the last resort to the Ministry of Public Instruction. The extent to which the power of any Minister may be carried was well illustrated in 1923-24 when the whole system of secondary studies was changed and rechanged by successive Ministerial decrees.

An appreciation of the principles underlying the State's relation to education in France is necessary to understand the status of private schools. That there is a demand for these is illustrated by the fact that about twenty per cent of French children are educated in them. But no private school may be opened without the approval of the Ministry, the inspector of an academy, the department officials, the local mayor, and the Public Prosecutor. The principals and teachers in private elementary schools must have the same qualifications as those in public schools, and all private schools must be open to inspection. After that, methods and curricula are left to the discretion of the school, an arrangement which does not work out so well in practice because advancement on the academic ladder and at times in the economic field is governed by the possession of certificates granted on the basis of government examinations. It is significant that scarcely any educational experiments of note have come from France.

There is some protest against the system from both lay and professional organizations. There is a demand for regionalism or

adaptation of educational organization to local needs, for more flexibility and less control from Paris. Up to the present nothing has been done to meet this demand, except that the latest revision of the elementary course of study leaves to the teachers some room for local adaptation, subject to the approval of the inspectors. If any change of larger scope should be undertaken, it is certain that one other dominating element will not be neglected, and that is such an organization of French education as will not deprive France of her preëminent international position as a leader of thought and culture.

The new German Constitution of 1919 opens the section on education with the statement that "Art, science, and instruction in them [the schools] are free. The State guarantees their protection and participates in their promotion." An attempt was made when the Constitution was being discussed, and since its adoption, to give a larger place to federal participation in education, but although the Constitution provides for the coöperation of the *Reich*, the states, and the municipalities, enthusiasm for federal participation waned as soon as it appeared that participation would not be accompanied by federal aid. Education, with some slight exceptions, is accordingly delegated mainly to the states. One of the serious topics of controversy, the relation of the State to religious instruction, was settled in the Constitution in a liberal provision by which room was found for denominational, interdenominational, and non-sectarian schools, with the right reserved for both teachers and pupils to abstain from religious instruction in the light of their own consciences. In spite of this constitutional provision this question is by no means settled, although a three-year contest on the subject has for the time being quieted down.

Education is, then, a matter for the State. In Prussia the function of the Ministry is broadly conceived and it has under its charge the promotion of not only education and science, but of fine arts as well, including museums, theatres, and moving pictures. The organization of the administrative system remains unchanged, but the spirit of the relationship between the State and localities, and the State and teachers has changed. Domination and prescription have been replaced by stimulation, advice, and counsel. This is best illustrated by the introduction of the word *Richtlinien* (suggestions) for the previous *Bestimmung* (decree) or *Verordnung* (ordinance) in such

matters as curricula, courses of study, and time-schedules. This change in the spirit of administration reflects a complete change in the principles underlying the relationship between the State and education. Under the pre-War theory the State was the repository of *Kultur* and to that end the State had the right of direction and dictation. The change from a monarchy to a republic has not, as in France, been merely a change in the form of government. The Constitution provides that education shall be conducted "in the spirit of the German national character and of international conciliation." From this has been adopted the principle that national character cannot be defined *à priori*, that it is something that must be slowly built up through education. Another task that has confronted German education is the development of a spirit of national solidarity that will bind all classes of society together by an internal rather than an external bond. Hence, the task of developing through the school the consciousness of a common culture. This raises the question of what constitutes national character and who can define it. Most German states have proceeded on the principle that culture is not one thing alone and that it is not subject to definition by authority. Accordingly, the function of the State is to provide those facilities that would lead to the spontaneous development of national culture through the interplay of the individual and his environment. This explains the substitution of suggestions and outlines for prescribed courses of study. The tendency of the State is thus to allow some freedom and flexibility in the interna and to set up standards for the externa—buildings, size of classes, length of school term, and the qualifications and salaries of teachers.

Beyond this the democratic state has another function, the equalization of opportunity for the best development of the individual. Little has been done in Germany to realize the hopes of those who advocated the *Einheitsschule* or the common school system. The only installment that has been made has been the federal law requiring all children to be educated for the first four years in the same school. Beyond this the access of bright pupils to secondary education has been facilitated by means of scholarships or reduction of fees. The place of private schools has been regulated by the Constitution; the private preparatory school, the special privilege of wealthy pupils, has been abolished; private instruction at home is prohibited

by law; private schools as a substitute for public schools may be established. Such schools, whether elementary or secondary, require the approval of the State, which implies that equipment, curricula, and the qualifications of teachers are not lower than in public schools; private elementary schools may be established only where in any locality there is no public school of the religious belief or *Weltanschauung* of any group, or for experimental purposes recognized by the authorities. Private schools are subject to inspection by the State; pupils may be admitted to examinations for certificates granted by the State, and, under certain conditions, financial aid may be given by the State.

If centralization in France is justified for the purpose of preserving French culture, it may be claimed that the new spirit of administration in Germany aims to promote the creation of a new culture based on individual development in order to produce citizens better able to cope with the problems of democracy and conscious of the common culture on which the new Germany is to be built. Since the attainment of this goal is no longer to be secured through rigid bureaucratic administration and prescribed curricula, Germany has again determined that the best method for its promotion is through the preparation of teachers. Considerable attention has been devoted to the new education in Germany; the most promising effort in Germany at the present time, however, is the new system of teacher training already organized for elementary teachers and proposed for secondary teachers. Here again Germany seems destined to assume leadership; the type of State control that characterized her past will disappear and the burden and responsibility for progress will devolve on the teachers. The new principle on which Germany seems to be building the relationship of the State to education is that of freedom exercised by a body of educational scientists. The results may not be as efficient as under a system that is bureaucratically controlled, but there will be that progress that comes from the interchange of thought and practice of men and women efficiently trained as the responsible agents for national education.

In contrast with that of France and Germany, the English educational organization and administration seems to be devoid of any philosophy or underlying principles. Like the Constitution, English education has grown up in a haphazard fashion and to-day represents

to the uninitiated a conglomeration of "public" schools that are private, of private schools that receive assistance from public funds, of some public schools that are sectarian and others that are undenominational in character. And yet all constitute a recognized part of the public school system. The long abstention of the State from the provision of education at public expense left the field free for private effort and the gradual creation of vested interests which could not be set aside when the public education system was finally established in all its ramifications and the foundation for a national system was laid in 1902. The apparent chaos and existence side by side of public and private education are justified in English political philosophy. It is unnecessary here to enter into the long conflict for and against State intervention in education.

The English view is that the essence of a national system of education is that the State shall see to it that every citizen is assured of a minimum of education, but the responsibility of providing that minimum of education is placed on the parents who are required to send their children within the compulsory age limits to an efficient school, whether public or private. The minimum of education has gradually increased and the next step will be to extend the compulsory requirement to fifteen and to include in the last four years the elements of a secondary education. Anyone may open a private school without any formality, but legally all private schools for children within the compulsory age limits are subject to inspection by the state, or the locality, or some other recognized agency. The fundamental theory is that initiative, growth, and personality can be assured only by allowing reasonable freedom whether education is provided by a public authority or by private effort. It is felt that there is an incompatibility between the enforced uniformity of a bureaucratic system and the varied enterprise of a system that is supervisory and advisory. The important national asset to be assured is free experimentation or adaptation to local or group needs in order to secure rich variety of character. Personality tells in education and all obstacles to its development must be removed. The proper ideal seems to be, according to Sir Michael Sadler, "variety set in a framework of national organization." The function of the State is to recognize and, when necessary, aid every kind of efficient and needed school. The well-being of a national system of education, as of individuals,

depends on a blend of authority and liberty, freedom and responsibility. Education is a moral affair and the government cannot claim a monopoly of moral control; while education should be permeated with a sense of national duty, it does not follow that national duty can be interpreted by the government alone. The national organization should be broad enough to include groups of schools representing different convictions, diverse ways of life, and varied traditions of judgment, leaving the choice to the parents. The chief task for the State is to enforce education under the best possible conditions and to let those who will provide it, taking care only that adequate facilities are supplied at public expense.

The fundamental theory underlying English education was enunciated by John Stuart Mill in his essay *On Liberty*:

> That the whole or any large part of the education of the people should be in State hands, I go as far as anyone in deprecating. All that has been said of the importance of individuality of character, and diversity of opinions and modes of conduct, involves, as of the same unspeakable importance, diversity of education. A general state education is a mere contrivance for moulding people to be exactly like one another, and as the mould in which it casts them is that which pleases the predominant power in the government, whether this be a monarch, a priesthood, an aristocracy, or the majority of the existing generation; in proportion as it is efficient and successful, it establishes a despotism over the mind, leading by natural tendency to one over the body. An education established and controlled by the State should only exist, if it exist at all, as one among competing experiments, carried on for the purpose of example and stimulus to keep the others up to a certain standard of excellence.

It follows from this that state control is exercised through the annual grant which is distributed for educational purposes under conditions that set up general standards. But these conditions are concerned mainly with the externa—all those factors that make an efficient educative process possible. Through the grant the State is able to define standards for buildings and playgrounds, medical inspection, length of term, qualifications and remuneration of teachers, and the efficient organization of a coördinated system. The State refrains, however, from prescribing curricula and courses of study. Elementary education is defined as that education given in an elementary school, and secondary education as that education appropri-

ate to the needs of boys and girls between the ages of twelve and seventeen. Nor does the State prescribe the types of schools to be established; each local authority is required to draft periodically a scheme for the comprehensive and progressive development of education in its area; the agency of the State, the Board of Education, has the right to approve, but in cases of disagreement on a scheme a conference is held between the local authority and the Board, and if an agreement cannot be reached, Parliament is the last resort. The responsibility accordingly falls upon the local authorities to "maintain and keep efficient" the schools in their area subject to the conditions of the grant and the advice and suggestions of the Board's inspectors. A similar responsibility devolves upon each school in which the burden of the conduct of the school, the promotion of pupils, the supervision of teachers, and the making of courses of study falls on the principal.

State grants are not restricted to schools maintained by public authorities; while no private school of elementary grade may share in the grant, private secondary schools that are not run for private profit are eligible under certain conditions, such as inspection, general efficiency, and the admission of a percentage of the pupils from public elementary schools free of tuition.

Just as the State does not prescribe curricula and courses of study, except by way of Suggestions and Memoranda based not on theory but on the best current practice, so it refrains from conducting examinations, which are left for secondary education to a number of recognized agencies. Even in the training of teachers the Board has recently abandoned its former practice of examining them for the certificates and has delegated them, with some reservations, to regional boards on whose recommendation the certificates are granted by the Board.

The relation of the State to education in England is thus characterized by flexibility, stimulus, advice, consultation, and financial encouragement and reward. The results are uneven and spotty; as compared with other leading countries, England has some of the best schools in the world and some of the worst. The system of education reflects the essential English characteristics—a horror of theory, fear of mechanical organization, and worship of individual freedom as the essential element for the development of character. The best

summary of the principles underlying the relation of the State to education is that contained in one of the Board's publications: "The only uniformity of practice that the Board of Education desires to see in the teaching of the public elementary school (the same applies to any other type of school) is that each teacher shall think for himself and work out for himself such methods of teaching as may use his powers to the best advantage and be best suited to the particular needs and conditions of the school. Uniformity in details of practice (except in the mere routine of school management) is not desirable, even if it were attainable. But freedom implies a corresponding responsibility in its use."

The three countries, France, Germany, and England, thus illustrate three types of state relationship to education—France highly centralized for self-protection and for the maintenance of her cultural preëminence; Germany gradually democratizing her educational system to secure national solidarity through the free development of a common culture, hesitant in the provision of equality of opportunity, and carefully controlling the growth of the private school; and England pursuing her principle of *laissez faire*, encouraging both public and private effort, and on the threshold of providing equality of opportunity to break down class distinctions and to foster a fellowship of mind through a common education. Another type, which recalls Plato's *Republic* and Hegelian political philosophy, is that represented by Russia and Italy, where education is based on the theory that the child belongs to the State. The logical elaboration of this theory in Russia would have led to the withdrawal of children from their parents to be educated from the earliest years to be trained in State institutions. In both countries the State assumes that the chief function of education is to politicize the younger generation in accordance with the prevalent political and economic theories of the State. Private schools are tolerated but chiefly to provide an education where the State is unable to do so and completely under State supervision. In both countries one finds the curious anomaly of an attempt to build up an educational system that combines progressive principles with political and economic indoctrination, which is made possible by the careful selection of the right body of teachers, close supervision, and control of textbooks. Both countries to-day furnish the best examples—Italy perhaps less than Russia—of a breadth in the con-

cept of education as an all-pervasive influence, more effective even outside than inside the school.

What does each of the states discussed expect from its investment for education? In France the aim of education is to secure the citizen loyal to republican principles and imbued with an appreciation of her national culture; Germany looks for the self-reliant, resourceful citizen, active and initiating, and loyal to the principles of the new democracy; England aims to develop the character and personality of the individual on the Platonic theory that if the individual is properly educated, the welfare of the State is assured; Russian education is directed to the production of loyal Communists, and Italian, of loyal Fascists. In each country the aim of the State appears to be clear and education is adjusted to that aim. The time has come when education in the United States must become more self-conscious than it has been. The one enduring aim that has persisted since the Revolution, equality of opportunity, is not an adequate guide for the development of a national system of education. Nor can it be claimed that the other aim, the development of "republican machines," has been satisfactorily met. There has, particularly during and since the War, been much talk of Americanization, especially of the immigrant, but true Americanization, whether of the immigrant or of the citizen, is not likely to be achieved until there is a better conception of what is meant by Americanism and the fundamental principles underlying American society. Until that is achieved American education is likely to be at the beck and call of new theories, changing devices, and uncertain objectives.

A FIVE-YEAR STUDY OF NUTRITION TEACHING IN THE FIFTH AND SIXTH GRADES OF THE ELEMENTARY SCHOOL

By MARY SWARTZ ROSE
Professor of Nutrition, Teachers College

INTRODUCTION

THE science of nutrition has developed a new way to health. When this infant among the sciences was introduced into Teachers College shortly prior to the opening of the School of Practical Arts, its function appeared to be mainly to interpret the customs of mankind with regard to food. Empiricism had been at work for thousands of years; man had formed, through experience, his eating habits. It did not seem likely that science could improve upon them. Even those best informed little dreamed of the possibilities for health control to be revealed in the succeeding quarter of a century. In that earlier period the study of nutrition was confined to grown-ups, because any real appreciation depended upon an extensive background of chemistry and biology. There were special diets for certain metabolic disturbances, but for those who were not sick the practical applications were mostly economic—how to get the most body fuel for the least money.

To-day the whole situation has changed. Nutrition has become a science to live by. It has gone beyond the college classroom to improve the lives of all who will learn the principles of health control through food selection. Every year there is new evidence that the science of nutrition is for the healing of the nations. The conquest, one by one, of scourges like scurvy, beriberi and rickets, dramatic as it has been, is not so significant for the human race as a whole as is the acquirement of knowledge which will improve the health of every man, woman, and child through better use of food. Sherman has recently said that with the knowledge we now have it is possible

to add at least as much to the span of human life by dietary improvement alone as has been added in the past fifteen years by all other health measures combined.

As a result of studies of the dietary properties of individual food materials, nutrition has become teachable in a new sense. It can now explain the special merits or glaring defects of common foods and show how to use them to best advantage. Nutrition is not a simple science; it must deal at all times with a variety of factors operating in variable situations, but some of its deductions are now so clear that any child beginning to inquire Why? and How? about life may be given some basic truths in a fashion so convincing as to influence daily conduct.

The importance of nutrition education for children began to be appreciated about the time of the conclusion of the World War. In 1919 the Department of Nutrition of Teachers College began its first extramural classes for children and from that time to this there has been no break in the study of this phase of nutrition education. Opportunities were found for students to teach in all grades of the elementary school and much thought was given to suitable subject matter and methods for each grade. It became increasingly apparent as the work developed that the first level at which some clearly formulated nutrition principles in terms of dietary essentials would begin to function was about the fifth grade, and it became equally clear from experience with adults that if people are to live by the principles of nutrition, these must be inculcated when children are beginning to think of control of their own lives. In 1925 an intensive study in the fifth and sixth grades of the elementary school was contemplated, and an invitation to experiment in Public School 157, Manhattan, was cordially extended by the principal. This was gladly accepted and the work then initiated is still continuing in this same school, with the much appreciated coöperation of the principal and of the teachers in whose rooms the nutrition teaching has been done.

Inasmuch as the introduction of nutrition teaching into elementary schools is comparatively new, any nutritionist who undertakes to serve a community ón a professional basis is under the necessity of beginning in all grades at once, and can only in the course of years hope to work out a progressive, coördinated course of study for the

different age levels. It seemed worth while to anticipate by at least five years the need for a suitable course of study for the fifth and sixth grades and to try to develop a plan of instruction for children who might have had in earlier grades such food education as we had been giving to the younger children in another school. In Public School 157, we were most fortunate in finding a school in which general health education was already being developed, and we have confined ourselves strictly to the teaching of food in relation to health; not spending much time on those phases of general hygiene—sleep, rest, fresh air, cleanliness, and the like—in which the grade teachers themselves have been giving instruction. No health program can be effective without attention to the remedying of physical defects, but this work, too, has been assumed by the classroom teachers. In our effort to build up a course of study of a progressive character for the fifth and sixth grades we have been constantly supported by the principal, who, often at great inconvenience, has kept certain of her best classes as nearly intact as possible from term to term through three consecutive terms.

During the first year of this study we were fortunate in having the counsel of Professor Cora M. Winchell and the assistance of Mrs. Annette T. Herr of the department of Household Arts Education.[1] The second year Miss Grace Reeves, of the Horace Mann School, gave generously of her time, helping the student teachers who conducted the lessons to adapt them to the children, not only by conferences but also by herself giving a series of demonstration lessons based on the plans which had been partially developed the previous year. The coöperation of these coworkers in Teachers College was of the greatest value and is most deeply appreciated. At the end of two years we had a tentative course of study for the fifth grade which it has been the privilege of later groups of graduate students in nutrition to develop more fully and to use as a guide in formulating a program for the sixth grade.

From the outset, the aim has been to select some of the fundamental principles which anyone who is to choose food intelligently must understand, and to present them in such a way that each child may be able to appreciate their health value and be impelled to accept them as guiding principles for his life.

[1] Mrs. Herr is now State Leader of Home Demonstration Agents, Extension Service in Massachusetts Agricultural College.

Nutrition teaching cannot be successful without taking into account home situations and actual needs of individual children. To determine these, much time was spent during the first three years in studying home conditions, usually every home in the class being visited at least once during the term. The children attending Public School 157 live in apartment houses where sunshine and fresh air are generally at a premium and where ideal conditions for quiet sleep at a suitably early hour rarely exist. Many mothers go out to work and are not at home to prepare the noon meal. There is no regular lunchroom in the school and an adequate midday meal is often a difficult problem. Some children have money to buy their lunches from small shops in the neighborhood of the school; some go home and prepare their own food; others bring lunches from home and eat them in a classroom designated for the purpose. The school provides hot soup or cocoa for those who wish to purchase it, and a mid-morning milk service for those who will buy the milk. Breakfast is often uncertain and inadequate. The children often stay up too late at night to rise promptly in the morning, and to avoid tardiness they hurry off to school without food. Even where the family income is sufficient to insure plenty of food, knowledge of what constitutes a good diet for a growing child is often lacking. Some contacts have been made with the parents through the Parent-Teacher Association, but the school has no regular visiting teacher or nutritionist to help with readjustments needed in the home.

Under any circumstances, it is the obligation of the nutrition teacher to help the children to help themselves, but this responsibility is especially great in a school whose children are generally underprivileged and often very poor. Each child must be taught to use foods which can be afforded, and ways of using them which are not too difficult for him to practice himself. Very early many of these boys and girls begin to assume responsibility for the ordering of their own lives, and it has been our constant aim to show them how they can build and keep strong healthy bodies.

In earlier grades nutrition teaching is mainly concerned with developing attitudes and endeavoring to build habits. But by the time the fifth grade is reached the time has come when there should be some explanation of the reasons for those habits and attitudes, as well as further fostering of both. The subject of food is more com-

plicated and requires knowledge of more facts than any other health subject taught in school. One by one, in carefully graded sequence, the basic principles which guide to wise choice of food must be clearly and effectively impressed. There have been no precedents to guide in this work, such as exist for the older school subjects. The choice of subject matter; the preparation of suitable illustrative material to make lessons concrete and vivid and related to the children's actual experience; the devising of appropriate activities to enlist child participation at every stage of work; even the building up of a suitable phraseology to convey new ideas effectively have been problems to which successive groups of graduate students of nutrition have given their best efforts. Each series of lessons has been repeatedly tested by student teachers, with the rest of the group observing and advising, so that each year has been marked by enrichment of subject matter, improvement of technique, and increasing interest on the part of teachers and pupils.

In our earliest endeavors it became apparent that there is no true guide to food selection except knowledge of the composition of food materials and the functions of different dietary essentials. As Dr. Ray Lyman Wilbur says: "It is desirable to form health habits, but also important to give the child a sound knowledge of the principles of physiology and hygiene so that in the future it can modify its habits intelligently as the need may arise." The rule "Sleep with your windows open" is simple. It applies to any time of year, any window, and any child. It needs little qualification. But when one comes to food, how different the situation. Eat an apple a day—or if you haven't an apple, a pear; and if you haven't a pear, a peach; and if you haven't a peach, a plum, and so on until the point of the apple "rule" is lost entirely. We must cause the children to *think* nutritionally, not merely try to put over rules.

Throughout this work an attempt has been made to select certain basic ideas which any one whose life is to be guided by the science of nutrition must appreciate; to arrange these in sequence according to their suitability for fifth and sixth grade children; and by repeated tests with different classes to determine whether children can grasp them and make them a driving force in their lives.

The lessons, in series of ten for each term, have centered around a single dietary essential with its significance for health and growth

stated in terms so simple that every child can understand them. These have been carefully related to the experience of the children in the various classes. It is hoped that a brief description of those parts of this course of study which have been tried out most thoroughly will be suggestive to others interested in nutrition as a part of health education.[2]

Series I—Fifth Grade

FOOD MAKES A DIFFERENCE

The introductory theme is "Food makes a Difference." No voluntary control of diet can be expected unless a person really believes that choice of food can help or hinder his success in life. Fortunately, by means of familiar animals, it is possible to show very strikingly in a few weeks that growth can be greatly fostered by a good diet and retarded by a poor one. Pictures of pairs of well-known animals of the same age, such as dogs, pigs, and chickens, are introduced first. The animals are not the same size, because their food was not the same. In all other respects their lives were alike. The pictures prepare the way for the use of actual living animals, matched as to age and size, for a class experiment. In the ordinary schoolroom the standard laboratory animal for nutrition study—the white rat—serves admirably. It is small, clean, gentle, and adapted to cage life. An adequate diet for it can be made from two ordinary foods—milk and whole-wheat bread. A pair of animals can be grown on this diet and compared with two others fed an equally simple diet, composed of such popular foods as white bread and coffee, or sweet buns and tea. Striking results may be seen in four or five weeks. In seven or eight weeks the children will be begging that the rats on the poorer diet be changed to the good one "because they look so pitiful." An important part of the demonstration is seeing the miserable animals rapidly improve when the diet is changed.[3]

[2] A syllabus giving more detailed description of the individual lessons is in preparation.

[3] Spencer, Gene, *An Animal Feeding Experiment, Showing the Effect of Deficient Diet on Growth*. Nutrition and Health Education Bureau, University of Texas, Austin, Texas (1926). Price 25 cents. This bulletin gives a description of school feeding demonstrations with white rats. Winchell, Florence, *Food Facts for Every Day*. J. B. Lippincott Company, Philadelphia, Pa. (1924). Price $1.00. This book gives pictures and descriptions of animals fed with and without milk. Larger separate pictures, "Milk Made the Difference," can be obtained from the National Dairy Council, Chicago, Ill.

WE CAN LEARN HOW TO FEED CHILDREN BY STUDYING ANIMALS

The children are told that it is possible to learn what foods are good for boys and girls through the study of animals. In all phases of biological research progress has depended upon suitable experimental animals. From the dog we learned the cause of diabetes and an effective way to control the disease; various animals have been useful in revealing the essentials of an adequate diet, but the white rat is an especially satisfactory subject for nutrition research. Only through observation of animals shorter lived than ourselves can we learn how food affects health. The children easily enter into the spirit of an experiment—"to find out something." In the fifth grade they know about experimenters—Edison, for instance, and how much his experiments have brought into their lives. They are interested in naming the rats and deciding on their food. Each one has a chance at least to touch them, if circumstances do not permit their feeding them daily and weighing them weekly. Discussion of how to make the best animal or the best boy or girl leads to consideration of "the signs of health" and the live white rat with its bright eyes, soft white fur, clean nose, and pink ears, feet, and tail gives an objective basis for considering signs of health in the children themselves. That the children make the application is indicated by an account of one class experiment written by a member for the school paper.

The Story of Six White Rats

Once upon a time there were six little brothers and sisters, children of Mr. and Mrs. White Rat. They were just four weeks old when they started to school and they all weighed between forty and fifty grams. The first two were fed on bread and coffee for nine weeks. At the end of that time they only weighed sixty grams. They were thin and did not play. Their fur was yellow and their noses seemed to run as if they had the snuffles. We were afraid they would die so their food was changed to bread and milk and they increased in weight immediately. At the end of fourteen weeks they weighed a little over two hundred grams and were very lively and happy.

The second two were fed on bread and meat. At first they gained very fast, but at the end of thirteen weeks they had only reached one hundred and twenty grams. Then they began to lose weight very rapidly and would have died if we had kept giving them only bread and meat.

> The third pair were fed upon bread and milk and they gained steadily. At the end of fourteen weeks they weighed two hundred and forty grams.
>
> We fed the rats in our nutrition class and then after we weighed them the teacher would weigh us to see which pair of rats we were like. We all tried to make our weight graphs go up as the graphs of the bread and milk rats did and we all felt so sorry for the bread and coffee rats we decided not to drink any more coffee.

This first animal experiment teaches not only that food makes a difference, but also since it is a contrast of milk and coffee (or milk and tea) it goes farther and shows that "milk makes a difference." Now is the moment to stress the fact that each child needs a glass of milk at every meal, and that he can profitably use a full quart bottle of it every day, what is not taken at meals being either cooked into food at home or taken as a mid-morning lunch at school. To make the impression strong, a quart bottle of real milk is taken into the classroom, along with three glasses, which the children fill, one for each meal. What shall be done with the remainder of the quart becomes an interesting question for discussion. An assignment for the next time may be to find out what foods at home are cooked with milk, to stimulate the children to discuss the food lesson at home, and to give the teacher further information about home habits.

THE AMOUNT OF FOOD MAKES A DIFFERENCE

Another basic idea in nutrition is that of quantity control. "The amount of food makes a difference." Aside from milk, there is no food for which we can set a definite volume or weight as a standard for a day because there is always some substitute, usually of different measure. So we are at once confronted with the need for some common unit of measure of food values. We find this in the calorie —"the measure of the food we need for our activities." Fifth grade children understand measuring and are familiar with problems of mensuration in arithmetic. Their thought can be directed to measures which apply to themselves, such as height and weight, possibly body temperature. But the idea of taking one's measure for a breakfast is a new one. The analogy of the automobile is most useful and excellent pictures of cars of different sizes are easy to secure. "Here is something that goes. What makes it go?" "Gasoline." "Here is

a picture of something else that goes (a street car). What makes it go?" "Electricity." Then a picture of a steamboat: "What makes it go?" "Coal." Finally a picture of a boy on the run. "What makes him go?" "Food." "How many miles will a small roadster go on a gallon of gasoline?" "Will a large truck go as far on the same amount?" The boys and girls know that a "big car takes more gas than a little car" and that "a car going up hill needs more than a car running on the level." Similarly, "a big boy takes more food than a little boy and a boy running takes more than a boy standing still."

Everybody knows, too, about the meters for gasoline in the filling stations, but a new measure must be introduced for food, called calories. We get calories only from food. Every time we move we spend calories. To make this spending concrete, a boy goes up to the front and stands before the class. "Is he using calories? See how still he stands." The class decides that he is not perfectly still—his heart is beating, he is breathing, his eyelids open and shut. Another child comes up to "spend more calories." To do this, he may jump up and down or do some vigorous exercise learned in the gymnasium. One class has made a "movie reel." In reality this is simply a roll of heavy manilla paper with rods at each end to roll it up like a scroll. The children have printed captions and pasted on suitable pictures. The first section shows spending of only a few calories—pictures of people sleeping, reclining, sitting, writing, eating, etc.; the next indicates spending of more calories—pictures of people walking or playing golf or engaged in light exercise; and the third, spending of many calories—pictures of people playing tennis or football, swimming, etc. To fix still better the idea of activities, each child keeps a record of everything he does from rising in the morning until noon. Now the definition of calories can be extended: "Calories are a measure of the food we need for our activities."

When the children get clearly the idea that every time they move they spend calories, they need a calorie standard for their own breakfast in terms of their own weight, and we have adopted for these grades this rule: "the calories a fifth grade boy or girl needs for breakfast we find by multiplying what he or she should weigh in pounds by 8." [4]

[4] Dividing the average requirement of 32 calories per pound per day into 8 for breakfast, 10 for lunch, and 14 for dinner.

Everyone's breakfast should fit him, just as a pair of shoes or a cap or a coat should fit. Now there is a felt need of knowledge of calories in food, and at the next lesson the teacher may prepare to study calories in foods for breakfast, providing for the purpose bowls and plates of various sizes, a double boiler containing some cooked oatmeal, a pint of milk, and a loaf of whole-wheat bread. Any child who had oatmeal at home may be permitted to select from the teacher's assortment the kind of dish he ate his breakfast food in at home and put into it from the double boiler as much oatmeal as he actually ate. This is the only way he can tell how much he consumed because he is not used to thinking of food by measure. The teacher can then give him a measuring cup and let him find out how much his oatmeal measures. Only after this experience is she in a position to say "a cupful of oatmeal will give you 125 calories to spend." The child may next pour over the oatmeal the amount of milk he used on it at home, and this in turn may be measured. If he had a glass of milk to drink, he may pour that out, too. Now the teacher may tell him that a glass of milk (not quite a full cup) furnishes 160 calories. From the loaf of bread may be cut slices such as the children have at home. Some will be thick, others thin, and the teacher may say that a slice of bread ½ inch thick will furnish 50 calories. Adding together all the calories a given child had for breakfast may reveal a large discrepancy between what he had and what he needed.

When a child has found out how much whole-wheat bread and milk will make him a breakfast that yields the calories he needs, another fundamental concept of nutrition may be approached; namely, that certain foods are interchangeable on a calorie basis, but at a different cost: 200 calories of whole-wheat bread may be "exchanged" for 200 of oatmeal at a cost of two-fifths of a cent or for 200 of puffed wheat at a cost of 3 cents! Since so large a portion of most people's money goes for food, what is more important than learning that there is no direct connection between nutritive value and cost?

Not only must children learn what foods are desirable for health and growth, they must also learn how to make them acceptable to themselves. Some will find pleasure in hot milk flavored with cocoa, and served with toast; others in hot milk poured over a shredded

wheat biscuit, instead of cold milk and plain bread. The class making the "movie reel" referred to already has also made one depicting simple breakfasts for a week, all on the same pattern—"cereal, milk, bread, fruit." The use of colored models[5] of foods with their calorie values indicated enables children to construct a set of foods (a "cafeteria") which if placed in some easily accessible corner will often be consulted.

Luncheon may be studied in a fashion similar to breakfast, only now the total calories required will be found by multiplying the standard weight by 10. Again the calorie need may be met first by whole-wheat bread and milk, and then variations may be introduced such as vegetable soup for plain milk, and graham crackers for bread; or substitution of an apple for part of the bread. Suggestions of changes must be such as are within the children's power to effect. Since many buy their lunches, and soda water often tempts them, a lesson on the comparative value of soda water and milk may be timely. Homemade sandwiches with a cheese or peanut butter filling will yield more calories than most of those sold in the shops. Such practical instruction meets a real need for knowledge of how to spend 10, 15, or 20 cents to best advantage.

As a preparation for consideration of supper (or evening dinner) "activities" from supper time until next morning are studied. This is an opportunity to stress the importance of sleep as a factor in growth. The children are quick to perceive that calories must be spent even during sleep, for the heart is beating and respiration does not stop—"every time we move we spend calories." A fifth grade boy or girl needs for supper 14 times "standard" weight.[6] Again starting with enough whole-wheat bread and milk to make a good evening meal, we may replace part of the bread by a raw vegetable. It may be too near the end of the term to make many suggestions about choice of food but the use of at least one valuable vegetable should be taught, choosing either a cheap raw one or canned peas or tomatoes.

By this time the rats that started on the diet of white bread and coffee, lost weight, and were changed to a diet of whole-wheat bread

[5] Roberts, Lydia J., Food Models. University of Chicago Press, 75 cents (uncolored). Detroit Dairy Council, Food Models, $3.00 (colored).

[6] Girls who are over 90 pounds have so nearly grown up that they may reduce their standard for calories to 12 × "standard" weight.

and milk, will have improved greatly but will not have caught up with the ones that have had a good diet from the beginning. There is no need to ask the children now whether food makes a difference. They have seen for themselves that this is so. One boy expressed it thus: "I tell my father and mother all about it. But no matter what I say about it they always say nonsense. I hope that some day they will believe me." Another wrote: "I have told my mother everything you have taught us. It has not made any difference in my family yet, but I hope it will some day."

Series II—Fifth Grade

TAKING MILK APART

The children enter on their second term of nutrition lessons understanding that milk is the most important single food for growth; that nutrition involves control of the quantity of food eaten; and that three regular meals a day are needed if their food intake is to meet their calorie expenditure. Other concepts which they must learn to appreciate are that food materials yield a variety of dietary essentials and that different foods have different nutritive properties. To help convey these ideas we have devised the scheme of "taking milk apart," with the immediate purpose of teaching its value as a source of calcium, an element in which the children's diets are very likely to be defective.

Milk lends itself well to the scheme of taking a food apart, because the children are familiar with cream, butter, and cheese. The topic may be introduced by considering the teacher's watch. From the outside there is no hint of the parts within; on opening it up, some can be seen, others are still hidden, but a jeweler could find them. Now a bottle of milk is like the watch—it does not look as if it could be taken apart, but it can. A cream dipper enables some child to skim off the cream. The teacher has prepared in advance two small, covered fruit jars partly filled with slightly sour cream. She hands one to a boy to shake, the other to a girl along with a small egg beater, and the boy and girl try to see which method will make butter first, shaking or beating. Soon the butter comes in each jar and both are passed for close inspection; then the butter is taken out, salted,

and put on tiny crackers so that each child may share in the lesson by having a taste.

The next lesson deals with separation of curds and whey. The teacher shows a glass of what looks like ordinary milk, but when she tips the tumbler the children are astonished that it does not spill out. "Frozen" they are apt to say. "No, not frozen, but jellied; would you like to make some?" Of course they would, so another glass of milk appears and a pan of hot water in which to warm it. While it is warming the children dissolve a junket tablet in a little water, measure sugar and vanilla, and write the recipe on the board. Finally the junket is set aside, neatly covered, to solidify. In the meantime, the teacher takes the original glass of junket and a spoon and lets some child break the curd. Very quickly the whey appears. So here is a further division into curds and whey. By this time the junket set aside is ready to taste (with paper spoons) and this concludes the second lesson in taking milk apart. The children are eager to make junket at home. With the help of the room teacher, they write letters to their mothers, telling how it is done, and later many report having tried it.

The next time the teacher brings to the class the exact amount of butter from one glass of milk, which some child measures level with a tablespoon and knife for the group. It is nearly a tablespoonful and yields 83 calories. She also brings some junket heated sufficiently to get a good separation of curds and whey and lets some child actually divide the curds from the whey before the class.

The next step is to take the whey apart. The children taste it, but are at a loss to describe the taste. Perhaps some one will venture that it is a little sweet. The teacher shows some milk sugar and the children taste that, but do not think it sweet either. Many of them are familiar with milk sugar because it is used at home for the baby. The teacher puts some of the milk sugar in water and the children stir it till it disappears. "Is it gone? Can we get it back?" She produces a string, it is hung in the jar, and the jar is set away to see what will happen.

WE NEED CALORIES PLUS CALCIUM

In another week, the milk sugar will have crystallized on the string and can be tasted and compared with the commercial milk sugar in

the package. Now that it has been shown that there are substances in water which we cannot see but which we can get out if we know how, it is time to talk about something else in the whey besides water and sugar. We cannot see or taste it. Only a chemist can get it out. It is called calcium. The teacher produces some calcium (oxide) and puts it into a glass of water. It disappears like the milk sugar. In a small bottle has been placed the amount of calcium (as oxide) obtained from one glass of milk and this is passed about for all to see. "Is calcium important? How could we find out?" The children suggest a feeding experiment, so one is planned. From former experience the children know a diet that will be sure to give good growth—milk and whole-wheat bread. They decide to feed this to the pair they name "Mr. and Mrs. Calcium" and to feed the other pair, "Mr. and Mrs. Non-Calcium," (their own choice of name) the same diet, except that a "chemical scientist" must be asked to remove the calcium from the milk. This experiment with calcium differs strikingly from the first one, in which the whole-wheat bread and milk diet was compared with the white bread and coffee diet. In the former case, one pair of animals lost weight very soon, and showed by their rough fur, irritable disposition, and tendency to inactivity that something was very much amiss; but the animals lacking calcium may give no outward sign. For many weeks they may grow just as well and look just as fit as the ones on the adequate diet. This is a good experience for the boy or girl who may be up to weight or even overweight in spite of very poor food habits. While the class is awaiting developments in the animal experiment, there is time for another kind of experiment. A chicken leg is put into a jar of dilute acid and its mate into a jar of water, and both are set aside for a week. When the teacher comes again, the bone in the acid is very pliable, while the one in the water is as hard as ever. The acid has taken the calcium out. Water alone could not do it. Calcium is what makes bones hard.

Now the teacher produces a picture of some tall building. "What makes this stand so straight and tall?" "The steel framework." Well, bones make a framework for the body just as steel does for the tall building. How a body which has a weak "framework" may look is illustrated by a picture of one or more very rachitic puppies. Their queerly bent legs are convincing evidence of the inadequacy of their

bones. Now the question is, "What kind of framework for their bodies are the rats making?" It is hard to see because of their thick fur, but the teacher can produce pictures of the skeletons of rats fed these same diets. It is quite easy to see that the framework made by "Mr. Calcium" is better than that made by "Mr. Non-Calcium." "What must we do if we want strong bones?" "Eat food with calcium in it." Milk has more calcium than any other common food, and that is one very good reason why boys and girls should have at least a glass of milk at every meal or, better still, a full quart every day. Boys and girls need "calories plus calcium"—calories to replace those spent in activities, calcium to help make strong bones and teeth. Milk gives calories plus calcium—two reasons why milk is such an important food for growing children.

SUNSHINE, THE "CALCIUM HELPER"

It would not be right to leave the boys and girls with the idea that calcium is solely responsible for strong bones and teeth. In order that calcium may be used by the body, there must be a "calcium helper." A new picture is brought in now—a chicken that has had plenty of calcium but has not had enough sunshine. Its legs are too weak for it to stand on, and its feathers are not smooth and glossy. Sunshine helps us use the calcium we get from milk; we may call it the "calcium helper." Another picture may be used to emphasize the fact that these things apply to children as well as to chickens and rats. This is the well-known war-time photograph of five Viennese children, all the same age, but only one of normal height and weight. This one had a good diet with milk and plenty of sunshine; the other four are so stunted that not one of them is more than half as tall as the normal one, and their legs are knock-kneed or bowed with rickets. It is becoming evident that boys and girls need "calories plus calcium plus sunshine." Now the discussion turns to how to get plenty of sunshine. In the summer, bathing or sun suits will give the sun a chance to shine directly on the skin, the only way it can act as the calcium helper; but how about the dark winter days? For these we have something quite wonderful—"bottled sunshine." The teacher exhibits a bottle of cod liver oil. So general has the use of this food for babies become that some of the children are sure to be familiar with it, but they do not know the reason for taking it. One

tablespoonful daily is advised, directly after a meal, wetting the spoon first with a little water or orange juice, and taking a little salt or orange juice after it. In the Hawaiian Islands, after a survey which showed the need of cod liver oil, 9,000 children and their teachers took it daily in school from November until April, but in this New York City school the taking of cod liver oil has not been emphasized as much as it probably ought to be. A great deal of emphasis, however, has been placed by the room teachers upon playing out-of-doors in the sunshine.

Before the end of the term the rats lacking calcium begin to show their deficiency by a tendency to inactivity and retarded growth. The children are quick to see that the animals are not so lively and that while they have not ceased to gain weight, they have not done as well as the ones on the diet rich in calcium, since they may weigh only two thirds as much. As one child described them, "Mr. and Mrs. Calcium had strong bones, bright eyes, and good fur. They were active. Mr. and Mrs. Non-Calcium were not active. Their fur was rough. They could not walk on their feet because their legs were too weak."

Series III—Sixth Grade

TAKING BUTTER APART TO FIND VITAMIN A

As a good introduction to the next unit of work, a careful review of "taking milk apart" seems desirable. A set of bottles containing water, butter, curds, milk sugar, and calcium each in the quantity present in one glass of milk is brought into the classroom, and the children are given an opportunity to explain how each was obtained. Then they are started on the project of making a paper model of a milk bottle with a series of "doors" pasted upon it, one over the other. The first one is blank and the size of the foundation. It folds back to disclose a similar model of the milk bottle cut on the line marking the usual point of separation of cream and skim milk. This enables one to fold back the part marked "skim milk" and reveal a duplicate of this, cut on a line to divide it into curds and whey. The part marked "whey" folds back to show its duplicate, divided into three parts, for water, milk sugar, and calcium. The "door" marked cream, also folds back to reveal a duplicate marked "butter." This is as far as the children's study has gone. But the

teacher now tells them that butter, too, can be taken apart. She then shows a watch glass, holding the unsaponifiable portion of the butter—a mere film of material in the center—and tells the children that when butter is taken apart by a chemist we get butter fat and this little bit of material which is not fat but which contains vitamin A. The children write this new name on their milk bottle models, which they can take home later and show to their parents. The teacher asks whether it would be a good idea to find out how important vitamin A is for growing boys and girls, and if so, how this might be done. By this time the children are quick to suggest a rat-feeding experiment paralleling the one with calcium—one pair fed whole-wheat bread and "milk with vitamin A left in it," and the other fed "milk with vitamin A taken out." The aid of the chemist having been invoked, the two pairs of animals are soon started on their diets. This unit of work has been chosen because growing children have not only a high calcium requirement which is not likely to be well met without a liberal intake of milk, but also a high vitamin A requirement which a quart of milk a day will go a long way toward meeting. It will furnish enough for good growth, but not all that a child can profitably use; so the value of vegetables rich in vitamin A to supplement it naturally forms the subject of succeeding lessons.

GREEN LEAVES FURNISH VITAMIN A

This topic has been approached by taking whole-wheat grains which contain no vitamin A, letting the children plant them in the classroom, water them, and watch them grow. Plants begin to make vitamin A as soon as they have two green leaves and the young wheat plants will manufacture vitamin A to be fed later to the rats lacking this vitamin if they need it. (This part of the program was suggested by a boy's asking how the vitamin A came to be in the milk.) Discussion now centers around green leaves. The children try to think of those which they know to be used as food. Among them, of course, is spinach, and the teacher suggests the making of some raw spinach sandwiches. This suggestion has the interest of novelty and the making of the sandwiches gives opportunity for activity on the part of the children. The relative merits of milk and butter as sources of vitamin A are discussed and the teacher leads the class to see that milk gives calories plus calcium plus vitamin A,

whereas butter gives only calories plus vitamin A. Each child has an opportunity to taste the new kind of sandwich and the name "vitamin A sandwich" is suggested. The children are asked to write letters telling their mothers about this lesson. How they remember the details is illustrated by the following letter.

> Dear Mother,
>
> Friday morning at 10:45 A.M. our health teacher, Miss M., came to teach the class a lesson. She brought a loaf of whole-wheat bread and some butter and some spinach. Miss M. had a girl wash her hands and then cut the whole wheat bread ½ inch thick. Then she had a boy butter the bread. After the bread was all buttered Miss M. had two girls cut up the spinach. When it was all cut she poured the sauce over the spinach. The sauce was vinegar, a little water and sugar and a little bit of salt. Everybody in the class had a little sandwich of whole-wheat bread and spinach. I like it very much. I want you to buy some spinach and a loaf of whole-wheat bread and try it. Miss M. told the class that spinach and green things had Vitamin "A" in them. We are also going to have an experiment on rats with Vitamin "A." Miss M. brought a mother rat and her baby rats. She said that she was going to take two pairs just as soon as they were old enough. We are going to name one pair Mr. & Mrs. Vitamin "A" and the other pair Mr. & Mrs. No Vitamin "A." The only difference in them is that one pair has milk with Vitamin "A" and whole-wheat bread and the other milk and whole-wheat bread without Vitamin "A."
>
> Your loving daughter,

OTHER GREEN PARTS OF PLANTS FURNISH VITAMIN A

The signs of vitamin A deficiency do not develop quickly, and for six or more weeks both pairs of animals will probably grow about equally well on the new diets. During this time, several vegetable lessons can be taught. Passing from the fact that all green leaves contain vitamin A, we may go on to show that other green parts besides leaves contain this vitamin. The teacher now brings in some fresh green peas (shelled) and tells the class that about 3/5 of a cup of these contains the same amount of vitamin A as one glass of milk. "Think what a fine supply of vitamin A if the peas and the milk were put together!" She has brought the necessary materials and equip-

ment (for this work is all done in the ordinary classroom) to make some cream of pea soup. The children are delighted to assist. Some flour is stirred into the sifted pea pulp, a little salt added, and the mixture turned into the milk already heating in the double boiler over a sterno stove. When the "vitamin A soup" is done, each child has a taste. Cream soups are not made in many homes, but when the children take the recipes home, the mothers very frequently use them.

SOME YELLOW PARTS OF PLANTS FURNISH VITAMIN A

Some plants do not keep all of their vitamin A in the green leaves; they store it away, sometimes in yellow parts and sometimes in red—the yellow carrot and the red tomato are both rich in it. City children do not know much about storage in their homes, but they at least know that furniture which is not needed is sent to the storage warehouse. It is quite impressive to see how a small piece of carrot (about one inch in cross section from a medium carrot) will furnish the same amount of vitamin A as one glass of milk.

The teacher is sure to show a new way to use carrots. It is desirable for children to learn to eat them raw. They may be cut into strips or "straws." The children prepare them and try them plain, then with a simple dressing of diluted vinegar, salt, and sugar. Placed in a bowl and sprinkled with some of the green leaves chopped fine, they make a very pretty dish which any boy or girl can repeat at home. One class expressed its enthusiasm in rhymes, and the following was inscribed on the blackboard for the nutrition teacher:

"We've studied about carrots,
Storehouses of gold;
Precious things are stored within,
In health class we've been told.
We've learned to eat raw carrots
And we eat them every day
In sandwiches and salads
For we want our Vitamin A."

After the rat experiment has continued about eight weeks the animals lacking vitamin A will have used up what was stored in their bodies from their mothers' milk while they were babies, and will

begin to lose weight rapidly. In a short time other signs of poor health appear—rough fur, "shabby" tails, congested noses, and possibly sneezing and coughing. The wheat planted earlier has now grown stout green shoots and this is fed to the animals lacking vitamin A, along with "milk with vitamin A in it," with striking results. In two or three weeks it is quite evident that vitamin A is a determining factor in growth, and that it will not do to decide by a few days' experience whether a food is important or not. Carrying such an experiment through a whole term, and teaching some simple and attractive ways of using the foods which are the most important sources of the vitamin in the locality, has, we believe, made a real impression on the lives of the children. Their attitude is reflected in this note to the teacher: "Before you came I did not drink milk, I always drank tea. Now I drink a quart of milk a day. I gain in weight nearly every month. Sometimes I eat spinach *but I guess I will soon get to like it.*" [7]

Series IV—Sixth Grade

THE GUINEA PIG SHOWS WHY VITAMIN C IS NEEDED

There still remains one point at which every child's diet must be definitely protected and that is with regard to vitamin C. This is being made the theme of the fourth series for the second half-year of the sixth grade, but has not yet been as fully developed as the other series. The previous animal experiments are recalled (this is easy, for the children recount every detail), and the point made in the first lessons, that we can learn from animals about the right way to feed boys and girls, is again stressed. This time two guinea pigs are chosen, one to be fed oats and milk (practically the same diet as whole wheat and milk), the other oats and milk with orange juice added. While awaiting developments, the problem of choosing a good luncheon is again considered, with a view to adding to whole-wheat bread and milk some dried fruit, such as raisins, to furnish extra calories quite cheaply. Raisin sandwiches may be made, their calories estimated and a luncheon of milk and sandwiches built up for a boy who needs perhaps 800 calories. This, again, is a meal that any child can get for himself.

[7] Italics are the author's.

But the guinea pig fed only oats and milk begins to look sick and will not grow, while the one which has the orange juice is a fine sleek pig and grows apace. This shows that there is something in orange juice which is needed by guinea pigs. It is called "vitamin C." The chemist can take vitamin C out of orange juice but it is very difficult to do—very much harder than taking calcium out of milk. "Perhaps now that you know about vitamin A," says the teacher, "you can remember that vitamin C is in the orange juice even if you do not see it until you are older and study chemistry yourselves." As the guinea pig without vitamin C grows sicker and sicker his teeth begin to loosen and soften. It is high time to give him some vitamin C and see what it will do for him. Is there any in raisins? The guinea pig might show whether there is or not. Some "raisin juice" is prepared (as the animals do not eat the whole fruit very readily), and a portion given every day for a week. But the poor pig grows worse and worse. Then it is decided that orange juice must be tried. He dives into the food cup in which it is offered and eats it eagerly. In a few days he is a changed creature. In a week even his loose teeth are better and his weight increases by leaps and bounds. Now it is clear that raisins and oranges cannot replace each other, because the raisins lack vitamin C.

Boys and girls are like the guinea pig in their need for a great deal of vitamin C. Babies get orange juice every day so that they may grow and so that the vitamin C may help calcium and the "calcium helper" to make strong teeth. Must every one have an orange every day? No, for the tomato has just as much vitamin C as the orange has and is sometimes much cheaper. A "tomato cocktail" made of strained canned tomato pulp seasoned with a little salt and sugar is made in the classroom and tasted by every child. The tomato is really a fruit, but there are raw vegetables that are very good sources of vitamin C, too, and one of these is raw cabbage. This is easily brought into the classroom, shredded, seasoned as raw carrots were earlier, with a dressing of diluted vinegar, salt, and sugar, and served on a small square of clean white paper to every child.

These lessons the children do not forget. They recount what they have seen and done to the minutest detail. We believe that they have

gained something that they can live by—conviction that whole-wheat bread and milk are the best foundation for any diet; that there is a need for calcium which can be successfully met only by a liberal amount of milk; a need for vitamin A great enough to require supplementing milk by green vegetables or other rich sources; and a need for vitamin C, best met by generous daily portions of orange juice, tomato, or other raw fruits and vegetables. The need for regular meals of suitable quantity has been made a simple law of demand and supply; if calories are spent they must be replaced, just as gasoline used up in running the car must be replaced.

We have given the children power to order their own lives more successfully than their fathers and mothers could, because there has been until now no such opportunity to learn how foods influence health. Yet this is only a beginning. If it serves as an inspiration to others to go farther, every one of those who have given time and thought and earnest effort to the work will feel generously repaid.

IMPLICATIONS OF RECENT RURAL SURVEYS FOR THE RURAL SCHOOL

With Special Reference to the High School Curriculum

By EDMUND DE S. BRUNNER
Associate in Rural Education, Teachers College

RECENT rural social surveys have made available a great mass of new data that have many implications for those concerned with the rural school. The production of this sort of material is likely to continue and even be accelerated due to resources that have been developed within the past few years. The task of summarizing this new knowledge, analyzing it, and drawing deductions for use in administering the rural school and in building its curriculum is a necessary one that has not yet been attempted. But it is a large order and quite beyond the scope of this paper.

For that reason it may be well at the outset to set down some of the major sources of the new data.

In the first place, I venture to mention the United States Census. Each new census is bringing more information that can be used. For instance, the 1925 Agricultural Census was the first to tabulate farm population *by counties*. Especially if this is continued in 1930 in some detail, it will enable the schoolmaster to know what kind of people he serves and how they compare in many ways with those of the city, the state, or the nation. There is reason to hope that the coming decennial census may give us many new data relating to population in county and village. But the most important recent contributions of the census have been the interpreted studies of population growth and decline, of school attendance and of population groups such as the immigrants and their children, and the farmers.

A second new source is to be found in the so-called Purnell studies of the various colleges of agriculture. These researches, financed by Federal funds, are delving into many aspects of the rural problem. Surveys of taxation certainly concern school support. The home economists are producing information that is of value, whether one is

concerned with the menu for school lunches or the content of the domestic science curriculum. And when the sociologists delve into the group relationships, the vocational leanings, the leisure-time activities, the plans, desires, and attitudes of rural youth, to mention only one series of these newer social studies, the rural schoolman can find in them tools fashioned for his hand.

Finally, there have been studies by a number of unrelated organizations such as the investigations by the Children's Bureau of child labor in rural counties, and the recent studies of agricultural villages and of foreign-born farmers and their children by the Institute of Social and Religious Research.

With such a wealth of material to draw from, it is possible in this short article to point out only a few important implications for the rural school and its curriculum growing out of the studies.

One fact that is becoming increasingly clearer is that rural education is centering more and more in the village. This trend is too little realized. The erection of dormitories for high school farm youth in a few scattered places may be exceptional, but it draws general attention to the townward sweep of farm boys and girls, all bent on acquiring what they think of as "an education." Many enter on the tuition basis, reimbursing the local school district for the expense of their training. Others are sent by their home districts. We are getting consolidation by social process that far outruns the gains in consolidation by legal enactment. This fact is full of importance when the proper area for a school district is to be considered, but that is a subject to be covered in another paper.

Most of us can remember when Dr. C. J. Galpin's first book, *Rural Life*, appeared only a decade ago. He showed that many farm youths in as progressive a state as Wisconsin lacked the opportunity for high school education. That lack has not been entirely supplied in many sections of the United States, but the situation has changed greatly. In the 140 agricultural villages studied by the Institute of Social and Religious Research in 1924-25, nearly half the village high school enrollment, 45.6 per cent to be exact, with variations by regions very small indeed, came from the country. When the enrollment of the few consolidated open-country high schools is added, one discovers that more than half the high school enrollment (51.5 per cent) in these village communities was composed of farm boys and girls—

nearly as high a proportion as the country population, white and Negro, bore to the total population of these communities.

This tendency is affecting even the elementary school. Except in the cases of the New York and Pennsylvania villages, one-fourth of the village elementary school enrollment came from the open country. In the South the proportion was well over one-third. Good roads and the automobile have brought this about, whatever may be the motive behind sending an average of seventy country children into the elementary school of each village studied.

This tendency among both high and elementary schools is likely to continue, not merely because of the possibility of its physical expansion but rather because the village school, whether consolidated or not, offers the only opportunity for rural children to receive instruction from trained teachers. Two-fifths of the children in these 140 village communities attended open-country schools, but four-fifths of the teachers with less than a two-year normal school course were in the country schools which drew only one-fourth of the normal school and one-twelfth of the college graduates. Most of the last group were in the few open-country consolidated high schools. Put another way, in proportion to the number of pupils, the open-country schools have for teachers only one-fifth as many college graduates as do the village schools, two-thirds as many normal school graduates, but twice as many teachers with less than normal school training. The trained teacher in rural America is, for the most part, in the village school.

The influx of country youth into village schools requires that the curricula of these schools be revised to meet the needs of two groups of young people of equal strength and importance coming from somewhat different environments—the farm and the village. It has been safe to assume in the past that the village boy or girl who did not stay in his home town would head cityward. Proportionately the exodus of youth from village to city has been greater than the more widely advertised "big parade" from farm to city, if the house to house enquiries of the Institute of Social and Religious Research in a number of the villages it studied are any basis for judging. A high school training with a distinctly urban slant was therefore quite legitimate for these village high schools. Those farm youths who received such training fifteen or twenty years ago were probably headed for the city when they left their ungraded elementary schools.

But are such assumptions safe under the conditions that have sprung up since the World War?

The challenge contained in this question cannot be met by introducing an optional course in agriculture into the high school curriculum. That has been done in two-thirds of the villages of the Middle West and in one-half of those in the other regions of the United States. It goes deeper than that. It involves the matter of how agriculture shall be taught, whether as a discipline or as a practical vocational subject, whether as a thing apart or integrated with the rest of the curriculum so that the "farm-bent" youth may learn that making the most out of agriculture ties up with social relationships and obligations, and with processes of marketing which require an understanding of economic trends and of the technique of coöperation, as well as of the traditional techniques of seed testing, tree spraying, and all the other things that enter into the production processes of agriculture.

But whether or not agricultural is taught, certainly there should be the utmost use of the environmental experience of the students in the entire general curriculum.

In only a few of the schools which included agriculture in the curriculum, was the subject being taught in a thoroughgoing way, and in nearly two-fifths of these village high schools the subject itself found no place in the curriculum. Among these were some schools that had once taught it but had dropped it and substituted a commercial course, either because the subject was too expensive or because of the agricultural depression.[1] One wonders whether, if there should be an overproduction of candidates for white collar jobs, these schools would reinstate agriculture and drop stenography and typewriting!

Such flexibility as was shown by the dropping of agriculture from the curriculum may delight anyone who endorses adapting curriculum to needs. But was this shift such an adaptation? Does not the very existence of the depression call for an organization of the teaching of agriculture that will go beyond the production aspect, which has monopolized so much attention, and consider the whole subject from the seed to the sower, from cultivation to marketing? Agriculture will not disappear because farm land lost 25 per cent in value from 1920 to 1925.

[1] Cf. The surveys of the Institute of Social and Religious Research, especially *American Agricultural Villages*, Chapter 5, by the writer.

Incidentally, it is interesting to note that the schools in villages of from 500 to 1,000 population were more likely to include agriculture in the curriculum than were schools in villages of from 1,000 to 2,500 population. These small villages were closer perhaps to the farmer and the educational needs of his children than were the larger centers. On the other hand, one eastern city of 300,000 population and several others just under 100,000 population have flourishing agricultural departments in their high schools, graduates of which are in demand in the specialized truck, fruit, and dairy farms of their trade areas.

But the whole aspect of high school curriculum must also be considered from two other aspects. Where are the graduates of the system now going? What do they intend to do in life? Several studies have been along this line recently.[2] I will refer again to the village studies of the Institute of Social and Religious Research, since, as their director, I am most familiar with them.

An analysis of the recent graduates of the high schools in the communities surveyed showed that virtually one-half continued their education in other institutions, except in the Middle West where the depression was most severe. Here the ratio was but one-third. About one-eighth of these entered business schools or similar agencies that had no set standard of academic excellence as a prerequisite for admission. The other seven-eighths entered college or normal school, with roughly one in three of this group going to the latter type of institution. Of those going to college, only one in seven (or if New York and Pennsylvania again be excluded, one in six) go to agricultural colleges. There are two or three clear-cut implications for the rural high school in these facts.

In the first place, the rural high school is a college preparatory school to a considerably greater extent in proportion to its enrollment than is the urban high school. One clear evidence of this, in addition to the proportion of students going on to college is found in the 1920 Census. In urban America, 15 per cent of the males and 13 per cent of the females from eighteen to twenty-one years of age, inclusive, had attended school in the year of the census. These are, of course, the college years and it is safe to assume that many students of this age were attending institutions of college rank. In these villages the proportion was 27 per cent for both sexes, relatively about

[2] See especially *Proceedings, The American Country Life Association*, Vol. IX, "Farm Youth."

twice as many. Urban high schools often minimize college preparatory work. "We must prepare for life, not for college," said the superintendent of one city system. Despite its smaller resources, evidenced in a lower per-pupil valuation and cost than obtained in the cities, the rural high school cannot take that attitude. It must do college preparatory work to the best of its ability because one-half of its students need it.

The second implication of the facts given is this—since so few high school graduates go on to agricultural colleges, agriculture is very evidently not, for them, a college preparatory subject. Those who take it in high school are far more likely to go back to the farm than to go on to college or to the city.

This answers the query as to what recent graduates from village high schools have done. The second question suggested as having a bearing on the curriculum was this: What lifework do those now in these schools expect to follow? Several thousand students were asked this question. Among the boys, of those who had a definite idea, nearly two-thirds were planning to pursue some type of engineering. One-fifth, many of them village boys, were expecting to farm. The remainder were considering business or one of the professions.

Among the girls, the choices were even more limited. More than one-half declared in favor of teaching; three-tenths elected business; and one-eighth, nursing. All other callings combined claimed the remaining 6 per cent.

Here again there are several implications for curriculum builders. I shall mention two of them.

The partiality of girls toward teaching may be caused by their desire to serve in this manner or by a lack of realization of the vocational opportunities open to women. It raises the question very definitely, however, as to whether there should be a teacher-training course in rural high schools. Agriculture is taught in many schools for a smaller proportion of the enrollment. The point raised is a debatable one. It involves state educational standards among other things. An alternative would be to stress the desirability of further preparation before teaching.

This suggestion raises another issue. Not only did the choices of lifework show a narrow range, but a very considerable proportion of both boys and girls were undecided about their future. Some were

concerned over this fact. It would appear that the village school should undertake some vocational guidance work. Manifestly it could not afford the elaborate set-up for such service which was found in some city school systems but it could at least (perhaps even as an extra-curricular activity or once a week at the morning assembly or chapel service) enlarge the vision of its students as to the great variety of jobs to be done in this twentieth century.

But whatever the rural youth turns to on finishing school he stays in school a year longer than his city cousin. Fewer than 2 in 5 of the 16- and 17-year-olds in the cities are still in school. In the villages the proportion is better than 3 in 5. In the entire rural group it is nearly one-half. This enables the village high school to count on the average student completing his full course. This may explain the relatively very slow progress that the junior high school has made in rural America.

Of course the richness of a curriculum depends somewhat on financial support. Each new subject added to the curriculum requires more time for teaching, and, if it be one of the precise sciences, more space and supplies for laboratory work. The Institute of Social and Religious Research in its village studies, from which I have been drawing many of the data used in this paper, attempted the experiment of finding out the effect of wealth on certain specific aspects of social life. The results need verification by other investigators having access to larger samples but, such as they are, they are interesting and hold certain implications for the subject in hand. The unit of measurement was a so-called household wealth index. It was found that villages with a low index were less likely to hold their grade school pupils through high school years, that they were less likely to have a school nurse or a public library. Furthermore, villages with higher household indices tended to pay their teachers at a higher rate per pupil taught, and also to provide more adequate teaching facilities.

The school is limited by the taxpayer. The taxpayer may be penurious or he may be limited by his resources. If the community really lacks wealth, then persuasion and idealism may secure the funds for a new building or a new course or a library or any other desideratum, but that ends other advances until wealth increases. Each expansion, then, of plant or curriculum should be made not merely because it is desirable, but because it is the *most* desirable thing

in the event that no other forward step can be taken for a considerable time. There has been too much guesswork in rural school expansion. Things good in themselves have been done and their doing has prevented the accomplishment of other things that would have been better for a given school system at that particular time with just the resources available.

Whenever the question of the resources of a rural school is discussed in these days, the background for that discussion is the agricultural depression. It is world-wide and the worst that America has ever known. It has affected the villages and created a widespread discontent among rural people. They are dissatisfied with country life or with their particular area. Better times seem to lie over the horizon in other occupations.

This was manifest among the high school youth in the villages studied. Asked whether they expected to take up their lifework in their home communities, the overwhelming answer of both boys and girls was an emphatic, frequently emotional, "No!"

This is not simply the characteristic revolt of youth against things as they are. The discontent of rural folk with their environment has been unmistakably registered by the unprecedented migration from the farms to cities and towns. The Department of Agriculture's studies estimate that in the past ten years 15,000,000 persons have departed from the farms alone, exclusive of the hamlets and villages, and that while there has been a counter movement from city to farm the net loss has amounted to nearly 6,000,000. Probably many of these people should have left. Too much food has been raised, so some folk must stop raising it. We all know that the Lord created men and women in order that the law of supply and demand might have something to work on! When enough people have left the country, to overcrowd the crowded cities still more, there will be so many people to feed and so few to feed them that a back-to-the-land movement will need no agency or Mussolini to promote it.

However, less than two-fifths of these departing farmers moved to town because of the depression. They were seeking education for their children, an easier life, and other social benefits. Hence, despite the growing urbanization of country life through the automobile, the telephone, mail delivery, electric power, and the radio, the urbanward stream flows on.

This raises an important question for the school. Has it laid adequate emphasis upon the admitted natural advantages of the country, and upon the improved character of rural living, or does the training it gives deepen the discontent of its students with things as they are? After all, a counter movement from city to farm many millions strong shows that the crowded ways of life have not led everyone to contentment. The mobility of our population is one of its privileges, a mark of our prosperity; but after all, if moving on is to be a solution for every distasteful problem, mobility becomes instability. Here then is *not* a problem of the inclusion or exclusion of a subject in or from a curriculum, but a matter for the rural school to consider—a matter which involves a questioning of its whole emphasis and philosophy, an appraisal of its spirit, a determination as to whether it affects, or is affected by the whims of the *Zeitgeist*. To such an adventure in thinking the facts in our present rural situation beckon the schools that would serve country people.

OPPORTUNITIES IN VOCATIONAL GUIDANCE

By HARRY DEXTER KITSON
Professor of Education, Teachers College

"WHAT are the opportunities in vocational guidance, and how can I enter the field?" This question comes to me so frequently that I shall attempt to answer it in the following article.

WHERE IS VOCATIONAL GUIDANCE CARRIED ON?

The places in which one may expect to do vocational guidance can be classed in four groups: public schools, colleges and universities, business establishments, and social service agencies.

1. *Public Schools.* Vocational guidance in public schools is given chiefly in junior high schools, senior high schools, continuation schools, and trade schools. Some large city systems have a well-organized bureau of vocational guidance with a director and a staff of experts, each of whom concentrates on one of the several functions of vocational guidance. In 1926 twenty-eight such cities were reported, among them Boston, Chicago, Cincinnati, Providence. In an ideally organized bureau one finds, besides the *director*, the following specialists:

Investigator of occupations. This person studies the occupations and gathers information which can be passed on to school children by counselors and teachers.

Teacher of courses in occupations. In a large city a number of teachers will be found who give courses in occupations, supervised by the department of vocational guidance. A course in occupations also exists in many cities where no organized bureau of vocational guidance is maintained; in which case, the course is given by teachers from different departments, such as civics or English. The course is most often given in the seventh, eighth, or ninth grade. It is occasionally given in the twelfth grade.

Counselor. The counselor is assigned to work in a particular

school where he or she holds individual conferences with pupils regarding their vocational plans. One who gives full time to counseling should, according to the best practice, look after the individual needs of no more than five hundred pupils. In actual practice, most counselors do not give full time to counseling. They teach as well—preferably the course in occupations.

It should not be understood that the counselor advises regarding vocational problems exclusively. He deals with educational problems as well. Indeed, in secondary schools these problems consume more time than purely vocational matters.

Placement and follow-up officer. In an efficiently organized bureau of vocational guidance someone specializes in finding jobs for juvenile workers. He visits places of employment and ascertains the needs of employers. Then he interviews applicants and sends to each employer the applicant best suited for the place. Later he follows up to see if the workers are giving satisfaction and if they themselves are satisfied. In continuation and trade schools such a person is sometimes called a "coördinator."

Besides these four specialists some bureaus include a psychologist, a social worker (usually a home visitor), a statistician, a medical officer, and a research worker on special problems.

As I have already intimated, such completely organized bureaus do not exist in many cities. But there are hundreds of city school systems, large and small, in which some of the functions described above are performed in an uncoördinated fashion. The two positions most frequently found are "teacher of the course in occupations" and "counselor." It is impossible to give the number of such positions. In 1926 the United States Bureau of Education reported that of 1,500 cities, more than one-third were giving courses in vocational information. The number is certainly much larger to-day.

Although I have confined my description to vocational guidance in public schools, I should remark also that this work has a vital place in the program of private and parochial schools, as is indicated by the following statement in an editorial in a leading Catholic paper:

> Many loyal and patient parents look forward to the day when some local Catholic educational institutions or some lay society will set up agencies for giving vocational advice to our parochial, high, and college students, and young people beginning in the world.

2. *Colleges and Universities.* Students in colleges and universities also need vocational guidance. Very few of them, however, have an officer who is officially recognized and who devotes full time to this work. Ideally, vocational guidance should be a part of a division of personnel. A careful investigation revealed fewer than forty institutions which have an officer bearing the title "director of vocational guidance," or "director of personnel." The list follows:

Antioch College, Yellow Springs, Ohio
Beloit College, Beloit, Wis.
Boston University, Boston, Mass.
Buffalo, University of, Buffalo, N. Y.
Chicago, University of, Chicago, Ill.
Colgate University, Hamilton, N. Y.
Colorado, University of, Boulder, Colo.
Connecticut College for Women, New London, Conn.
Coe College, Cedar Rapids, Iowa
Dartmouth College, Hanover, N. H.
Florida State College for Women, Tallahassee, Florida
Goucher College, Baltimore, Md.
Grinnell College, Grinnell, Iowa
Idaho, University of, Moscow, Idaho
Iowa State College, Ames, Iowa
Joliet Junior College, Joliet, Ill.
Kalamazoo College, Kalamazoo, Mich.
Long Island University, Brooklyn, N. Y.
Maclester College, St. Paul, Minn.
Michigan, University of, Ann Arbor, Mich.
Mills College, Mills College, Calif.
Missouri, University of, Columbia, Mo.
New Jersey College for Women, New Brunswick, N. J.
New York, College of the City of, New York City
New York University, New York City
North Carolina College for Women, Greensboro, N. C.
Northwestern University, Evanston, Ill.
Oberlin College, Oberlin, Ohio.
Oklahoma Agricultural and Mechanical College, Stillwater, Okla.
Pembroke College in Brown University, Providence, R. I.
Pennsylvania, University of, Philadelphia, Pa.
Princeton University, Princeton, N. J.
Purdue University, College of Engineering, Lafayette, Ind.
Rochester University, Rochester, N. Y.
Skidmore College, Saratoga Springs, N. Y.
Smith College, Northampton, Mass.
Syracuse University, Syracuse, N. Y.
Vassar College, Poughkeepsie, N. Y.
Washington and Lee University, Lexington, Va.
Wellesley College, Wellesley, Mass.
Wisconsin, University of, Madison, Wis.
Wittenberg College, Springfield, Ohio
Yale University, New Haven, Conn.

We should recognize the fact that many other colleges and universities have one or more persons who perform some of the func-

tions of vocational guidance. Many of them give a course in "Choosing a Vocation." Almost all the larger institutions maintain one or more bureaus of placement. But the persons who hold positions in these bureaus are usually burdened with other duties, instructional or administrative: they teach psychology, sociology, English, or what not; they serve as registrar, dean of the college, dean of men, or dean of women. Rarely have they had any training in the techniques of vocational guidance and personnel.

Meager as is the explicit recognition of vocational guidance in the seven hundred colleges and universities of the United States, the movement is growing. At least twenty-five per cent of the forty-three institutions named above have made the appointments during the past three years. No matter how rapidly the movement spreads, however, there will never be so many opportunities to do vocational guidance work in colleges as there will be in secondary schools. I mention this because there is an overwhelming number of persons, especially women, who are applying for positions as vocational counselors in colleges, and, in the very nature of things, many of them will be disappointed.

To the list of positions in a college might be added that of Professor of Vocational Guidance—one who gives training courses to persons who desire to do vocational guidance. While there are about fifty persons in the United States who give such courses, the number of openings is small; hence, one should not count very heavily on obtaining such a position during the next few years.

3. *Business Establishments.* Educational institutions are not, however, the only openings for experts in vocational guidance. Many factories, stores, and other organizations give vocational guidance to their employees. They have well-developed departments of personnel, and after they employ a worker they try to guide him so that he can progress from job to job to the best advantage. In such a department the guidance expert may keep records, serve as statistician or as interviewer, give tests, do home visiting, etc.

4. *Social Service Agencies.* There are a number of social service agencies that give vocational guidance. The Young Men's Christian Association and Young Women's Christian Association maintain vocational secretaries who specialize in this work. In 1928 the official

Yearbook of the former organization showed a total of fifty-nine secretaries who were specializing in vocational guidance. But a good deal of vocational guidance is given by other secretaries who do not bear the title. The same Yearbook reports 48,000 interviews on vocational matters. It is probable that the actual number was much greater.

Other agencies devoted to the welfare of young people, such as the Young Men's and Young Women's Hebrew Associations, Knights of Columbus, Boy Scouts, offer a field for experts in vocational guidance which will undoubtedly develop as time goes on. I know of at least two churches in which the director of religious education interprets his mission chiefly in terms of vocational guidance.

There are a few privately endowed agencies, such as the Vocational Service for Juniors in New York City and the Highlander Boy's Foundation in Denver, which offer openings. We should also note the offices of rehabilitation located in most states, which are organized to give vocational guidance and rehabilitation to persons who are handicapped either by accident or by birth. There are also agencies for giving vocational guidance to the blind, the deaf, the feeble-minded, and persons troubled with cardiac affections or tuberculosis.

In order to show the variety of non-educational openings let us note the positions held by persons who have received training in vocational guidance at Teachers College within the past few years: statistician in the personnel department of a department store; mental tester in same; mental tester in a manufacturing establishment; counselor for juvenile employees in a manufacturing concern; placement officer in a private vocational guidance agency; record-clerk in same; personnel director in a religious organization; director of a community boys' program; state rehabilitation officer; interviewer in the personnel department of a bank; vocational secretary, Young Men's Christian Association; and so on.

The functions which these persons perform are those mentioned at the beginning of this article: they investigate occupations and impart information about them; give counsel to individuals, help them find jobs, and follow them up. For no matter under what auspices one gives vocational guidance, he must perform these same functions.

WHAT KIND OF TRAINING IS NEEDED?

It must be admitted that many persons who now hold positions in the field of vocational guidance have never been specifically trained for them. When some of them entered upon the work, there was no place where they could obtain training. Many who have entered the field more recently do not know that there is any place now where they can receive training. Many consider vocational guidance only a side line, anyway, and do not think it important enough to be trained for. We can safely make the assertion, however, that vocational guidance has come to be a profession in itself and that any one who expects to succeed in it must obtain professional training for it just as he would seek specialized training to be a dentist, a lawyer, or an engineer.

Some erroneous ideas prevail among the persons who agree that one should secure some training before trying to do vocational guidance. One person will advise that training in psychology is the best; another will recommend training in sociology; another, in education; another, in economics. The fact is, *if one wishes to do vocational guidance he should be trained in vocational guidance.* His training should be a graduate course, just as medicine is a graduate course, preceded by a good liberal education in which one should have studied history, economics, psychology, sociology, education, and other subjects that contribute to a general education. The graduate work in vocational guidance should be of professional grade, *based on a job analysis of the work which one must perform in vocational guidance.* In accordance with these principles, a committee from the National Vocational Guidance Association has approved a sequence of training courses substantially as follows:

1. An introductory course giving the history and principles of vocational guidance with a survey of practices which obtain in the divers organizations which do vocational guidance.

2. Intensive courses in each of the functions of vocational guidance as follows:

a. Methods of analyzing vocational activities.
b. Methods of giving information about vocations.
c. Methods of analyzing individuals.
d. Counseling individuals.
e. Placement and follow-up.

3. Courses in necessary techniques:
   a. Statistics, full year.
   b. Mental tests, full year course, including practice in giving tests.
4. Courses giving related knowledge and techniques:
   a. Labor problems.
   b. Vocational education.
   c. Social case work.
   d. Mental hygiene.
   e. Abnormal psychology.
   f. Psychology of adolescence, etc.
5. Courses in research. Many of the positions in vocational guidance, especially those of higher rank, demand that one carry on investigations. Therefore the training period should include training in research.
6. Field work. While many of these techniques and much of this information can be acquired within academic walls, it is only practice that makes perfect. Accordingly, a good training course should provide facilities whereby the learner can obtain practice, under supervision, in performing the functions of vocational guidance. This can be arranged, provided the institution giving the training has established coöperative relations with agencies that do vocational guidance, through which students can obtain practice while they are learning. The place of such practical training in a program of preparation for vocational guidance is described in the TEACHERS COLLEGE RECORD for April, 1929.[1]

WHERE CAN I OBTAIN TRAINING?

Positions in vocational guidance are of two kinds—supervisory positions and subordinate positions. For the former, one needs all the training outlined above which would lead to the degree of Doctor of Philosophy. In the subordinate positions one can get along with less. The full program is offered in only two or three of the larger universities. But a lesser amount of training can be obtained in about forty institutions throughout the United States. These institutions usually give an introductory course in vocational guidance and courses in vocational psychology, labor problems, statistics, and

[1] An Internship for Vocational Counselors, by H. D. Kitson.

mental tests, though these courses are usually given from the standpoint of science or education rather than from the standpoint of vocational guidance.

It should be understood that, in addition to training along these lines, there are other requirements which one should fulfill. One should have a personality that is unusually appealing to young people, and must be able to win their confidence and trust. One should be far above the average in intelligence, for the problems he will meet will demand the keenest sort of intellect. Wide experience in various occupations is desirable, for without some experience in the occupational world one can hardly give well-rounded advice regarding it. For the license of vocational counselor, the state of New York requires a minimum of three months' experience in some occupation other than teaching. Other requirements for state licenses may be ascertained by writing to the state departments of education of New York and Pennsylvania.

HOW CAN I ENTER THE FIELD?

A great many people who have spent some years teaching English, or selling bonds, or preaching sermons decide that they would like to engage in vocational guidance. Some of them try to obtain a position without training. They find difficulty, however, in competing with applicants who have had professional training in vocational guidance. Others resign their positions and go to a university to obtain training in vocational guidance expecting, when they have completed it, to find a position easily. Some of them find openings, but others are disappointed. The fact is that when a superintendent of schools or the president of a college desires to appoint a person to give vocational guidance he does not think of writing first to the university to ask for a trained expert. Instead he looks around among the members of his staff for some one who shows an interest in the work. The person selected may have had no training, but if he is wise he will take a leave of absence and go to a university for training. At least fifty per cent of the students in our classes in Teachers College are persons who have been thus appointed and are preparing to fill positions which they already have in prospect. Most of these persons owe their appointment to the fact that they manifested an interest in the vocational welfare of young people in con-

nection with their everyday work. Such interest becomes known in a community, and when the superintendent or whoever is in authority decides to appoint some one officially he selects a person who has shown some interest and aptitude in the field. Until that time comes the would-be vocational counselor will be obliged to give his time and effort as counselor without pay. Of all the persons now serving as counselors, most of them began by giving volunteer service. In the public schools of New Orleans there are only three professional vocational counselors but there are thirty-three devoted teachers who are giving extra hours to vocational guidance without pay. And as soon as the Board of Education is able to add a staff of full-time counselors, it will certainly select them from this volunteer group.

If you desire to enter this growing field, you will find it easiest to follow their example. Start right where you are, for you can do vocational guidance in any place where there are young people. First take some time off and obtain training. I advise you not to resign your position, especially if you are thirty-five or forty years of age. Simply ask for a leave of absence or attend summer school. After you have obtained some training, ask permission to work in your own organization on a volunteer basis. The time is bound to come when vocational guidance will be adequately supported, and with your training and prestige you will be able to step into the positions as they are opened.

I have attempted to answer the questions which people are asking. Probably different answers will be required five or ten years hence, for vocational guidance is growing rapidly and developing with far-reaching ramifications. But for a few years to come you can safely follow the advice that is given here.

A STUDY OF THE TEACHERS COLLEGE STUDENTS WHO ARE REGULARLY EMPLOYED

By ROY N. ANDERSON
Associate in Guidance and Personnel, Teachers College

IF ONE chances to make the rounds of Columbia's campus at night he will see many classrooms lighted and will find practically as many students on the campus then as in the daytime. This condition inspired a casual survey of the catalogue of Teachers College to ascertain how many courses are offered in the evening. It was found that 43 per cent of the courses (1927-28) are offered after 4 P.M. and on Saturday. Since such a large number of courses is offered at these hours it would seem that the personnel of Teachers College might contain a large number of part-time students who are engaged in a full-time job. In order to substantiate this opinion and to discover how large the group really is, a study was undertaken to find out the number of students attending Teachers College who were holding full-time positions while pursuing their academic activities.

Answers were sought to the following questions: (1) How many students are engaged in regular occupational work and how many hours per week do they spend in it? (2) Is there any relation between these wage-earning activities and the amount of academic work which these students take; and between their proficiency in this work and their score on the general examination? (3) Is there a close relationship between their actual working experience and the theoretical work taken at Teachers College?

SOURCES OF DATA

The occupational status of the students was ascertained by means of a questionnaire sent out from the dean's office to all the students matriculated during the Winter Session of the year 1927-28. Eighty per cent, or 3,690, of the questionnaires were returned. Forty-eight per cent of this group were found to be regularly employed. (The

number was reduced to 1,503 since some of the questionnaires were incomplete and therefore not usable.)

The number of points carried at the College and the grades earned were taken from the records of the registrar's office. The grades were transmuted into T scores in order to compare them with T scores on the general examination.[1]

RESULTS

How many hours a week do students work? The number of hours which students are regularly employed ranges from 2½ to 84 a week, with an average of 29 hours. Examination of the distribution of the hours shows that the cases fall into three fairly distinct groups: 20 per cent work from 2 to 22½ hours; 70 per cent from 23 to 42½ hours; and 10 per cent from 43 to 84 hours a week. The average of 29 hours a week is probably accounted for by the fact that the majority are teachers who work, on an average, six hours a day, five days a week.

What kind of work are the students engaged in? The occupational activities of the students were revealed as follows: 78 per cent are engaged in educational work, subclassified as follows: 31 per cent elementary teachers, 27 per cent secondary teachers, 9 per cent administrators and supervisors, 5 per cent in higher education, 6 per cent in miscellaneous educational work; 13 per cent are engaged in nursing and religious and social service. The remaining 9 per cent are engaged in miscellaneous occupations (clerical, business, and domestic service).

What is the relation between students' wage-earning activities and amount and quality of work they do at the University, and their standing on the general examination?

The data for 782 cases are presented in Table I. The data on 422 graduate students and 360 undergraduate students were kept separate, but no reliable statistical differences were noted.

a. Points carried in the University: As may be seen in Column A of Table I, the students who work the median number of hours and those who work the maximum number carry about the same number of points—in round numbers, 6. This means that these students are full-time workers who are simply coming to Teachers College once

[1] Krieger, Laura, *Prediction and Success in Professional Courses for Teachers.* Contributions to Education, No. 420, Bureau of Publications, Teachers College, Columbia University.

TABLE I

RELATION BETWEEN WAGE-EARNING ACTIVITIES, AMOUNT AND QUALITY OF ACADEMIC WORK, AND STANDING ON GENERAL EXAMINATION

NUMBER OF WORKING HOURS	NUMBER OF CASES	COLUMN A		COLUMN B		COLUMN C	
		Points Carried		Academic Grades		Matriculation Examination	
		Mean	Sigma	Mean	Sigma	Mean	Sigma
Lower: 2–22.....	196	13.0	4.7	49.7	6.9	50.3	8.9
Middle: 23–42.....	522	6.3	3.5	50.3	8.2	50.6	7.9
Upper: 43–84.....	64	5.8	3.7	50.7	8.4	50.5	7.3
Total	782	7.9	4.2	50.1	8.0	50.5	8.1

or twice a week to take one or two courses. From the standpoint of the College, they are to be classified as part-time students. They constitute 38 per cent of the student body.

The figures show that a student who works less than 22 hours a week carries an average of 13 points, or two points less than a full program.

An investigation of a sampling of non-wage-earning students shows that they carry an average of 15 points; this is a full-time program.

b. Academic grades: From Column B it will be observed that the wage earners vary only slightly with respect to academic grades in terms of T scores. The students who work more than 43 hours a week make better grades than the students who work less than 23 hours. This difference is probably not statistically significant; nevertheless, there seems to be a tendency for grades to rise as the number of working hours increases. At any rate, it is not the students who are working the greatest number of hours who make the lowest grades.

The following possible reasons for the comparative excellence of academic grades might be assigned: (1) As might be expected, the students with the heaviest working schedule enroll for fewer courses and thus there is greater concentration. (2) There is probably a closer relationship between the work which the students are actually

doing and their major at the College. This was confirmed by a detailed study of the questionnaires of the group working more than 43 hours. (3) It is not likely that the group with the heaviest working schedules are more intelligent, since, as is shown in Column C, they did not make appreciably superior scores on the general examination.

c. Scores on the general examination: The T scores on the general examination (which consisted of the Thorndike College Entrance Examination, Parts I and II, and the I. E. R. Vocabulary and Reading Tests) give no indication that the students who work the greatest number of hours are superior to the other two groups of working students.

d. Correlations: In order to obtain further light on these relationships, correlations were computed between the various factors just mentioned. The working hours were held constant for the various groups but no relationships were significant between points carried and grades, and points carried and the general examination. The highest correlation was between academic grades and scores on the general examination: $+ .33 \pm .04$ (Pearson r).

e. Occupational activity and major in Teachers College: A detailed study of the questionnaires returned by the 64 students who are working more than 43 hours per week revealed the fact that 57 of those answering are engaged in an occupation for which they are specifically preparing at the College.

CONCLUSIONS

This investigation has only scratched the surface of the numerous personnel problems involved in a large urban college and thus only limited conclusions can be drawn. But it is the preliminary step which brings to light numerous cases that need adjustment.

If this sampling is representative of the student body, we can conclude that practically half (48 per cent) of our students are holding regular positions while they are pursuing their professional training. Of these about three-fourths are teachers, or at least engaged in the profession of education, who are learning their trade while they are working at it.

Some of the students work an appalling number of hours a week, but there is no evidence that their academic grades are suffering.

Apparently, as might be expected, they forestall such deficiency by limiting the number of points they carry. We should not be deceived by this, however, and conclude that no abuses occur, for students may be suffering ill effects from the standpoint of health. Only a series of individual case studies can reveal the true situation. Furthermore, it must be remembered that the cases studied did not include any persons who received marks of "incomplete" or "dropped." They may be more numerous in the wage-earning group than in the non-wage-earning group.

Such an investigation may have a bearing on administrative questions and policies. For example, at what hours are courses scheduled —in relation to number of points; in relation to courses of the various departments; and in relation to the required courses? Investigations should also be made comparing the status of wage-earning students with that of non-wage-earning students. It may be that as we discover more facts by methods of personnel research we shall evolve a unique plan for educating students in urban professional colleges.

A POSSIBLE SCHEME OF COÖRDINATION IN EDUCATION FOR HOMEMAKING*

By MATHILDE C. HADER

Former Student in Household Arts Education, Teachers College

PART TWO

THE PROBLEM OF SPECIALIZATION AND COÖRDINATION

IT IS apparent that specialization cannot be prevented since it forms the basis of civilization, and is found in all branches of knowledge. Its advantages and drawbacks have been much discussed by E. C. Lindeman, for instance, in his book *The Meaning of Adult Education* [18].

THE GENERAL PROBLEM WITH APPLICATION TO THE FIELD OF HOME ECONOMICS

We do want specialists to work on all the problems met with in homemaking, and we want the results of their experiments to be available to homemakers—"The utilization of all the resources of modern science to improve the home life," as Ellen Richards said. But home economics cannot undertake to solve all these problems and neither can it succeed if it confines itself to the study of a small part of them. What, then, is the task of home economics if it accepts this point of view? To try to discover this, one must answer several questions, one of them being: Can specialists as such work together as a group for a common purpose—in this case the improvement of homemaking?

Wherever one turns the impression is confirmed that just here lies one of the great problems of our present civilization. Whitehead says about this:

* Part I of this article appeared in the TEACHERS COLLEGE RECORD, vol. xxxi, pp. 663-675 (April, 1930).

> Effective knowledge is professionalized knowledge, supported by a restricted acquaintance with useful subjects subservient to it. This situation has its dangers. It produces minds in a groove. Each profession makes progress, but it is progress in its own groove. . . .
>
> The dangers arising from this aspect of professionalism are great, particularly in our democratic societies. The directive force of reason is weakened. The leading intellects lack balance. They see this set of circumstances, or that set, but not both sets together. The task of coördination is left to those who lack either the force or the character to succeed in some definite career. [19]

Dr. Alexis Carrel mentions "a loss of perspective and of grasp of fundamental principles caused by specialization in education and in thought." [20] *Coördination of specialized efforts* is the great need of the present period, and specialists cannot perform this function, and should not be called upon to do so.

The question is now whether or not home economists are willing to take upon themselves the responsibility of coördination in the field of homemaking. By being already established in the educational system with the general purpose of working for progress in homemaking, they are in the strategic position to do so, and there is as yet no other group devoting itself exclusively to the same problem, with the possible exception of the sponsors of the Child Development and Parental Education Movement who have the advantage of having focused directly on the educational aspects of home life. It is, however, still too early to know whether this group is going to duplicate the evolution of home economics toward its present dilemma of ineffective dilettanteism in many subjects on the one hand and of disintegrated specialism in a few subjects on the other, or whether it will take up the study of methods of coördinating the knowledge of the contributing sciences. Besides, they are not clearly separated from home economics.

However, there are many interested parties, and once the value of enlisting the aid of all is realized, schemes for joint investigations may appear under various names and auspices. In this connection it is significant to note that William Orton mentions the family as a possible project for a coördinated study at the Institute of Human Relations at Yale.

If home economics accepts this challenging situation it will involve

a close study of what this coördinating function implies. Orton writes thus:

> To an independent observer it seems that the value of the enterprise, at least in its early stages, may lie less in reference to specific social or individual problems than in regard to the possibility, and the technique of coöperative research as such. One does not—and the committee is aware of the fact—secure coöperation merely by assembling specialists in adjoining rooms under the same roof. To what extent, and by what methods, joint endeavor can be inaugurated is a problem of importance to all the social sciences, and it may take a few years, and a few mistakes, to find the right road. [21]

THE NEWER CONCEPTS OF BUSINESS MANAGEMENT AS OFFERING SUGGESTIONS FOR SOLUTION OF THE PROBLEM

It is evident that the problem is a difficult one, and there are few to whom to turn for help. It is important to realize that attention must to a large extent be transferred from content to methods and organization, and in doing so one's problem may become identical with that of otherwise unrelated groups. There is thus hardly any other group in society more vitally interested in the question of organization than students of scientific management and organization in industry, and acquaintance with their ideas proves most thought-provoking. One might be likely to think of industrial organization as extremely authoritarian and not at all applicable to the task of integrating the work of scientific experts. But one discovers among the most advanced thinkers in that field a very much changed conception of management and leadership. The old idea of the chief executive in absolute command is being slowly undermined by realization of the fact that in large industrial concerns he knows few details, and cannot safely interfere with the activities without consulting those who are in actual contact with them. It is even said that his work mostly consists in sanctioning the plans submitted to him by the lower executives, and Mary P. Follett speaks about "the illusion of final authority." [22] The idea of management as an emergent of the influence of all active participants in production is gaining ground; Tead and Metcalf [23] call the foreman "the executive head of a department" and maintain that "the foreman is responsible for *the coördination of the work* of those under him, with the work of those

in preceding and successive departments, and with that of the staff executives." The situation one encounters, then, is again that of many experts whose work must be synthesized, and of the impossibility of having anybody perform this function without the experts sharing in it. A direct contrast to the situation existing in education is, however, apparent: in industry managerial functions have been too strongly centered in the chief executive with consequent danger of not utilizing the experience of the experts, while in education there has been no attempt at unifying the knowledge of experts under any kind of leader—still with the same result, that their knowledge is not available for joint enterprises. Though the desired organization may be largely similar for both groups, the approach will have to be different—in industry by a distribution of authority, in education by the creation of methods of participation of specialists in common endeavors. How much the ultimate goals are related may be seen in the following statement by Follett:

> ". . . as it is the idea of pluralistic authority which is dominating progressive business organizations to-day, so the crux of business organization is how to join these various authorities." [24]

If management in business is coming to mean the joining of the experience of many experts, the question arises: What shall be the function of the leader—the chief executive? It is in the search for a new meaning of the word "leadership" that academic groups may join business and industry. It must be emphasized that the type usually associated with leadership—the domineering, aggressive, power-loving individual—has no place in this scheme. Such persons would have little chance of succeeding, particularly in connection with scientific experts who are used to being regarded as the flower of civilization and as the ultimate authority in all questions; it is even quite possible that they will resent any idea of admitting as their equal a non-specialist whose task it should be to integrate their experience. In business the problem is complicated by the right of the owners to exercise control through management, and still we find Follett expressing the following thoughts with regard to industry:

> We get power through effective relations. This means that some people are beginning to conceive of the leader, not as the man in the group who is able to assert his individual will and get others to follow

> him, but as the one who knows how to relate these different wills so that they will have a driving force. He must know how to create a group power rather than to express a personal power. [25]

And Tead [26] uses the phrase "creative leadership."

Only leadership as conceived by these writers might have some possibility of being accepted by specialists in the academic world, and even this would depend upon their realizing the ineffectiveness of the present situation. One should clearly distinguish between *consulting* experts and *coördinating* them; in the first case it is a question of advice to be taken or not, according to the wish of those who seek it; in the second case the decision of a problem is the result of the combined thinking of the specialists.

THE CONFERENCE SYSTEM

The most effective way in which leadership can be developed is through conferences, which have become such an indispensable part of the activities of business as well as other occupations. Person asks:

> Is not the conference and committee system, properly developed, really a *composite executive* which aids, on the one hand the chief executive in carrying the policy and project portion of executive responsibility, and on the other hand, the several department executives in carrying the responsibilities of detail execution? [27]

The problem is not solved by assembling specialists around a table with a conference foreman heading it. This has been abundantly shown in studies which have been made in recent years of conference and discussion procedures by pioneers in the field, like Mary P. Follett [28], Harrison Elliott [29], A. D. Sheffield [30], and members of The Inquiry [31]. The methods employed, and the uses to which conferences have been put have concealed their possibilities. Very commonly people come to meetings with a set of ideas with which they strongly identify themselves, and regard it as humiliating to give them up or modify them. It gives them self-satisfaction not merely to defend them, but frequently also to impose them upon others. The acquisitive-avertive tendencies, developed in a fighting world, are introduced into a situation which calls for coöperative qualities. As a group process the conference is then sterile; it produces no new values, or more often perhaps, opposing ideas result in

a conflict which may be destructive or end in that unstable arrangement which is represented by compromises.

A new understanding of the nature of collective thinking is required; it must be recognized as a joint, creative undertaking in the outcome of which individual contributions may not be identifiable. It is not a question of mere *addition* of ideas; if that were the purpose, the presence in person of each expert might not be necessary as his knowledge or opinions might be obtained in other ways. What is desired is a thinking process during which each step in the development of ideas is subjected to the influence of all the various points of view represented in the group; while this lasts, the ideas are not allowed to crystallize, but remain in a flux. It can readily be seen that this integrative thinking requires different attitudes from those of strong individualism and self-assertion, and how difficult it is to avoid evoking the latter. At the same time, what is sought is exactly that difference of point of view which normally arouses negative emotional reactions; such differences form the very basis of a creative discussion, the *raison d'être* of the various specialists in the group, so that methods of dealing with differences in such a way as to incorporate them in the joint thinking become of the greatest importance.

The studies referred to deal extensively with methods of conducting conferences and of making constructive use of differences, but more light has perhaps been thrown on the discussion technique of groups of laymen than on that of groups of experts, for the latter in some ways present a different problem. In addition to the difficulties involved in the former case comes a clash with the professional interests of the specialists. The intellectually creative world is competitive in the same sense as the commercial world, the difference being that the values consist in ideas, not in tangible things. Original ideas are not given away more freely than money; they may constitute valuable assets, to be exchanged directly for money or indirectly by enhancing the prestige of an individual and consequently improving his chances of obtaining better positions. But in order to do so, the ideas must be recognized as his property, the most common way being to have them printed under his name. The man with a creative mind is constantly at work increasing the body of thoughts which is acknowledged as his property, and he cannot afford to spread his ideas anonymously, however deeply interested he may be in his work

for its own sake. This situation is, of course, generally understood and accepted, but the effects it has on the free interchange of thoughts seem to be less clearly realized. The exchange which goes on through the medium of the printed word is not affected, but it is probable that the spontaneous give-and-take of ideas between persons in face-to-face relations frequently is seriously impeded. The temptation to withhold ideas which one believes to be valuable may easily dominate, and this is greatly to be deplored because of the stimulating effect of free interchange of ideas upon intellectual growth which far surpasses reading in value. In any attempt to join specialists in collective thinking one may have to reckon with this factor; there is, however, no experience available to show how much of an obstacle it really represents.

THE CONFERENCE CHAIRMAN OR COÖRDINATOR

While the attitude of the experts toward joint thinking—their willingness to coöperate for this purpose—is of very great consequence, the main responsibility for the outcome rests with the conference chairman, or coördinator; hence, close attention must be given to his part in the process. It is his duty to provide for a clear definition of the aims, for an outline of the chief points for discussion, whenever possible worked out together with the members of the group, and for the conducting of discussion as described with such insight by Harrison Elliott. [32] The success of the coördinator depends largely upon his knowledge of human nature, and his ability to prevent from arising those emotions which interfere with a coöperative enterprise—anger, hate, jealousy, fear, distrust, etc.—and to create what Follett calls "the collective will," [33] in himself as well as in the rest of the group. As Elliott says: "There must be an entire willingness on his part to be an impartial chairman reporting the group's progress, rather than being a protagonist for some point of view." [34] The ideal coördinator should be emotionally and intellectually impartial in asking questions, in developing suggestions from the group, and in summarizing; however, it is scarcely possible to attain this perfect state. Heredity and environment determine his physical and mental traits, and his reaction to situations.

The subjective element in the work of the coördinator must be recognized, and it becomes important to consider his intellectual and

emotional equipment, when the question of his selection of training arises. Emotionally, the make-up of an individual is determined very early in life, according to students of child psychology; and since little change is possible in adult life, the selection will have to be made chiefly on the basis of what a person already is. In the same way he would have to measure up to the degree of intelligence desired. The changeable factors are the kind and amount of knowledge he possesses. That he must not be highly specialized in any direction should be clear; on the contrary it seems a warrantable conclusion that he ought to have a *wide* knowledge of the content of the general field in which he is going to function. As long as this *even* distribution of knowledge is maintained, depth of learning might only increase his effectiveness. An exception to this should probably be made in respect to psychology, which he would need to be thoroughly acquainted with, because the character of the personal relations within the group, which largely determines the outcome of the joint thinking, depends so much on his understanding of the situation and his skill in dealing with it. Closely connected with psychology is the technique of procedure which can be objectified to a large extent, as it is by experienced discussion leaders. Although the body of transmissible knowledge still is small, it is reasonable to assume that a constantly increasing area of the functions of the coördinator may be subjected to critical analysis and a factual basis for his training may be created, a development analogous to that which has taken place in education. Dennison has expressed these ideas well with regard to the training of business managers; he says:

> The ability to make people work reasonably well together is fundamental to business management. Now if this ability is born in us, if managers are born and not made, then we should stop here. If it is to be more than that, then there must be an orderly thought out basis, an orderly scheme of the knowledge that exists at any given moment, which can be used as a schedule for the instruction and better development of managers. [35]

COÖRDINATION IN REGARD TO COLLEGE EDUCATION

While the form of organizing specialists working for a common purpose into conferences and committees, with a chairman or coordinator who is chiefly responsible for the results, may be applicable

to many fields, and in the educational system might be used at different levels, it is of greatest interest to visualize its introduction to a highly varied group of specialists of pronounced achievement in their respective fields, such as may be found in colleges and universities. H. S. Person makes a clear statement concerning these ideas; he says: "The university should consider itself an integral whole with specialized parts, these parts to be utilized in coördination according to their several capacities to contribute to the economical achievement of any purpose of the university." [36] Such purposes might be the training of students in various professions, or the undertaking of research problems related to these, and in each case there would be one person in whom the coördinating functions were vested. It would be his obligation to represent the interests of that group of students academically, to plan and prepare for joint meetings of the specialists, to act as chairman at these conferences, and to keep in touch with the coöperating experts in between—in short, to make the coördinating process a continuous one, not only a discrete series of committee meetings and conferences. There are obviously many points of similarity between such a coördinator and an administrator, but a fundamental difference is that authority is not a part of his equipment; he should replace the administrator for many educational purposes, or one might perhaps say that the administrator should become a coördinator.

No very radical change should be made in the work of the specialists. The coöperative aspect of their task should not take the place of independent research or teaching, but its value would be found in the joint formulation of new plans and of new hypotheses, to be the basis for subsequent detailed study by the specialists, and in that way it would provide them with a widened understanding of the whole problem to the solution of which they contribute their share. Not only might this be expected to make them better specialists, in their capacities of teachers or research workers, but it might also make possible an increased feeling of satisfaction with their work, which now frequently seems to be lacking, and perhaps is one reason why specialists often either develop strong avocational interests, or leave their field entirely in favor of administrative positions.

APPLICATION TO HOME ECONOMICS EDUCATION

What has been said about academic education in general applies specifically to the study of home economics. The reservation must be made, however, that the university might not at all wish to focus on the problem of homemaking as a whole, but prefer to conduct research solely and to train teachers in separate subjects related to it. This would, under all circumstances, constitute an important part of its work, as specialists in such subjects as foods, nutrition, textiles, clothing, and the like probably always will be in great demand professionally. Their knowledge may be applied in different fields—teaching, in connection with manufacturing and selling of household commodities, in institutions and hotels—but not necessarily have any direct bearing upon the home. The term *home* economics is, then, not truly descriptive.

In case the university really aims at studying homemaking as a unified field, a thorough reorganization of the subjects at present known as home economics would be involved. As I have tried to show previously, homemaking includes many more activities than can or should be represented in a home economics department; but in a university organized as Person suggests, this fencing off of subjects in departments would have no place. The specialists within the home economics department who have hitherto been regarded as students of the specific problems with which the home is concerned, would then be free to coöperate with other specialists in varying combinations for purposes not connected with homemaking. One can easily imagine experts in these subjects being needed for joint studies in other fields; for instance, hygiene, public health, physical education, economics (with respect to consumption), architecture (in the planning of kitchens, for example), and perhaps medicine. And, of course, in any study of homemaking these experts would be important participants.

A question might be asked concerning who would want to take such a college course in homemaking, and for what type of work it would qualify. It must again be emphasized that this is not a specialized subject, and that anything which approaches a well-rounded study of it involves widespread interest. To what extent such training could be of use professionally is uncertain. It might

be expected to appeal to students with a leaning toward the study of social problems, whose vocational opportunities might be fairly similar to those of students of sociology, and also to those who wish to prepare for future work in the home—as indicated by the popularity of the course in euthenics at Vassar College, the organization of which bears considerable resemblance to such a broad course in homemaking. In case there should arise demands for teachers of the cultural aspects of homemaking in high schools, as distinct from the teachers of homemaking skills (not to the exclusion of the latter, but supplementing them), students with this type of training should be able to fill such positions satisfactorily.

THE TRAINING OF THE COÖRDINATOR IN HOMEMAKING ECONOMICS

Above all, the course might be of great importance as a basis for the training of coördinators in homemaking, not in itself being an adequate preparation for such a sphere of activity. However, as the coördinator needs knowledge related to the problem which is studied, that part of his necessary qualifications might be furnished in a course of this type. As indicated before, the possible requirements for the training of the coördinator might lie in the following general areas:

I. A broad cultural background.
II. Familiarity with the general content of the special fields to be coördinated.
III. Thorough acquaintance with psychology to enable the coördinator to deal with the delicate problems in human relationships which arise in connection with his or her work.
IV. Skill in using the special technique of conference procedure, as far as it is worked out at present.

The training obtained in an undergraduate course in homemaking might meet the first two requirements, certainly the second of them, and some understanding should be provided of what the problem of the integration of specialists means in contemporary life, with particular emphasis on the home. But the undertaking of a task of such a difficult nature is decidedly beyond the capacity of young graduates. It calls not only for greatly increased knowledge in the areas mentioned above but also for a mature personality. At the same time it should be possible to develop in the student an interest in such a field of activity, and to provide the rudiments of the knowl-

edge needed. The attitude thus created should, in any case, be of value to the student in her social contacts, whether as a citizen or as a member of a family, and likewise vocationally, although her application of these ideas might be quite tentative at this stage, without any very definite objectives or responsibilities.

Further training, for those who have shown aptitude and interest, might be undertaken later and might emphasize the special psychological and technical problems underlying joint thought and action. Comparatively little stress would then be laid on the content of homemaking education (including technical training, which, though important, would occupy less time than in present home economics curricula) which should have been adequately covered in the college course. The studies to be pursued would in large measure be common ground for possible coördinators in many other fields of study, like social work, business management, public health, to mention only a few examples, so that one might picture the establishment of a "Coordinators Institute" in some large center of learning which could offer the needed facilities.

That the home economics group is in no unique position in needing a synthesis of its knowledge is apparent, and to expect this profession to be a pioneer in undertaking the experimentation with ideas of far-reaching consequences, and as yet appreciated by a small group only, may be unreasonable. At the same time, the home economics profession might conceivably have a strong incentive toward self-analysis and improvement, due to its being one of the newcomers in the educational system and, as such, enjoying a less secure position than many of the older professions, whose shortcomings are more easily tolerated.

BIBLIOGRAPHY

18. E. C. Lindeman, *The Meaning of Adult Education*, p. 117. New Republic, Inc., 1926.
19. Alfred North Whitehead, *Science and the Modern World*, pp. 282-283. The Macmillan Company, 1926.
20. Alexis Carrel, quoted in "Taking Inventory of the World's Mind." The New York *Times*, April 3, 1929.
21. William Orton, "Synthetic Humanism at Yale," *The New Republic*, p. 91. March 13, 1929.
22. Mary P. Follett, "The Illusion of Final Authority." *Bulletin of the Taylor Society*, Vol. XL, No. 5 (1926), p. 243.

23. ORDWAY TEAD AND HENRY C. METCALF, *Personnel Administration,* p. 156. McGraw-Hill Book Company, Inc., 1920.
24. FOLLETT, *op. cit.,* p. 246.
25. MARY P. FOLLETT in HENRY C. METCALF, *The Psychological Foundations of Management,* p. 221. A. W. Shaw Company, 1927.
26. ORDWAY TEAD, "The Nature and Uses of Creative Leadership," *Bulletin of the Taylor Society,* Vol. XII, No. 3 (1926), pp. 394-406.
27. H. S. PERSON, "The Relation of the Chief Executive to His Principal Associate Executives, p. 50. *Bulletin of the Taylor Society,* April, 1926.
28. MARY P. FOLLETT, *Creative Experience,* Longmans, Green & Co., 1924.
29. HARRISON ELLIOTT, *The Process of Group Thinking.* Association Press, 1928.
30. A. D. SHEFFIELD, "Creative Discussion," *The Inquiry,* 1927.
31. "Community Conflict," *The Inquiry,* 1929.
32. ELLIOTT, *op. cit.,* p. 66.
33. MARY P. FOLLETT, *The New State,* Chapters II-V. Longmans, Green & Co., 1923.
34. ELLIOTT, *op. cit.,* p. 71.
35. HENRY S. DENNISON in HENRY C. METCALF, *The Psychological Foundations of Management,* p. 11.
36. H. S. PERSON, in a discussion of the training of business managers. *Bulletin of the Taylor Society,* February, 1925, p. 10.

ABSTRACTS OF RECENT RESEARCH IN COOKERY AND ALLIED SUBJECTS

IV. VEGETABLES AND FRUITS

By VICTORIA CARLSSON
Instructor in Household Arts, Teachers College

I. HISTORY AND ORIGIN OF FRUITS AND VEGETABLES

IN THE beginning of the nineteenth century the origin of most of our cultivated plants was unknown. In 1855, Alphonse De Candolle conducted research to discover the countries in which our cultivated plants occurred in the wild state. Since that time he and others have confirmed and extended this knowledge to 247 species. Of these, the Old World contributed 199, America 45, and the origins of 3 are yet unknown. De Candolle with infinite care searched the records of the most eminent naturalists, archæologists, paleontologists, historians, geologists, and philologists and personally interviewed those living at the time. This abstract on the origin of, to us, most interesting plants will be given under the following headings: [7]

A. "A species cultivated for more than 4,000 years (according to ancient historians, the monuments of ancient Egypt, Chinese works, and botanical and philological indications)." [7]

B. "Cultivated for more than 2,000 years (indicated in Theophrastus, found among lacustrine remains, or representing various signs, such as possessing Hebrew or Sanskrit names)." [7]

C. "Cultivated for less than 2,000 years (mentioned in Dioscorides and not by Theophrastus, seen in the frescoes at Pompeii, or introduced at a known date." [7] Also cultivated in America before and after the continent was discovered. [7]

A. Cultivated for More Than 4,000 Years

Rice. De Candolle considers that rice probably existed before all art of cultivation in South Asia from China to Bengal. It played

the principal part in the annual ceremony instituted by the Chinese Emperor Chinnong 2800 B.C. The princes of his family could sow four seeds, but he must himself sow the rice. Rice was cultivated in India after the Aryan invasion and in Greece after Alexander's expedition. At the beginning of the Christian era it was introduced into Syria, where it was cultivated in A.D. 1468. [7]

Lentils. These have been cultivated in the East, in the Mediterranean Basin, and even in Switzerland, from prehistoric times. According to Herodotus and Theophrastus, the ancient Egyptians used them to a great extent. It is believed that Esau's famous pottage was made of lentils. This pottage was red because the lentils had been hulled. [7]

Broad bean. The origin of this vegetable is rather obscure, but De Candolle considers it to be twofold: Asia south of the Caspian Sea, and North Africa. The bean has been cultivated in Europe since prehistoric times. The ancient Roman rites required that beans be put in the sacrifices to the goddess Carna. Beans were mentioned in *The Iliad* as a cultivated plant and they have been found in the excavations of Troy. They were cultivated by the ancient Egyptians. Later Herodotus states, "The Egyptians never sow the bean in their land, and if it grows they do not eat it either cooked or raw. The priests can not endure the sight of it; they imagine that this vegetable is unclean." This may be the reason why beans or lentils were never found in the sarcophagi, and drawings of these plants were never seen on their monuments. [7]

Onion. According to De Candolle the onion must have originated in India and spread from there through Egypt and Greece to Italy and all over Europe, where it has been cultivated since time immemorial. The ancient Greeks and Romans knew several varieties, and one variety which was grown in Egypt was held so excellent that it received divine honors. Cortes says it was known in Mexico. [7]

Garlic. De Candolle believes that garlic was cultivated by the earliest people of Europe and Asia. No drawings of it appear on the Egyptian monuments, but this may be due to the fact that Egyptian priests considered it unclean. [7]

Cucumber. De Candolle believes that the cucumber originated in Northwestern India, where it has been cultivated for at least 3,000 years. Ambassadore Chang-kien introduced it into China in the second

century before Christ. From China the cultivation of it spread over Europe. [7]

Turnip. There are many varieties of the turnip, which is native to temperate Europe and Western Asia. Its cultivation was diffused through Europe before, and through Asia after, the Aryan invasion. [7]

Cabbage. This family of plants has evolved by natural selection from the colewort, a plant of European origin growing wild on the seashores of the south of England, Ireland, the Channel Isles, Denmark, and the north coast of the Mediterranean. Theophrastus distinguishes three kinds; Pliny, six. Cauliflower was known to the Greeks and Romans, but it was not much cultivated in England until the seventeenth century. [7]

Water cress. The origin of water cress is obscure. De Candolle believes it to be of Persian origin; from Persia it may have spread after the Sanskrit epoch into the gardens of India, Syria, Greece, and Egypt and even as far as Abyssinia. [7]

Radish. This vegetable appears to have originated in Western Asia between Palestine Anatolia and the Caucasus, perhaps also in Greece; from an early period its cultivation spread from east to west. Herodotus speaks of radish, and it was included in the rations of the pyramid builders; it occurs in the inscription on the monument of the pyramid of Cheops. [7]

Fig. The fig has been cultivated from the most remote antiquity, as shown by the ancient historical and sacred writings. It appeared in drawings found in Egypt in the pyramid of Gizeh, which is believed to date between 4200 and 1500 B.C. Its origin and geographical limits have a close analogy to that of the olive. It is mentioned in the earliest Egyptian and Hebrew writings. Homer tells in *The Iliad* that the fig grew near Troy and he also mentions it in *The Odyssey.* Theophrastus and Dioscorides mention the wild fig in their writings. Romulus and Remus, according to tradition, were nursed at the foot of a fig tree called ruminalis, from rumen, breast or udder. [7]

Date palm. The date palm has existed from prehistoric times in the warm dry zones which extend from Senegal to the basin of the Indus. The Egyptian and Assyrian remains show that it early grew in abundance in the regions between the Euphrates and the Nile.

The Egyptian monuments contain drawings of the fruit and of the tree. But David, about 1000 B.C. or seven centuries after Moses, does not mention it among the trees to be planted in his gardens. Herodotus, in the fifth century before Christ, mentions the dates of Babylon and Libya. Pliny mentions the date palm in the Canaries. The Chinese received it from Persia in the third century of our era. It was planted here and there along trade routes, or was disseminated by the wandering tribes, the stones germinating easily in damp soil near rivers, oases in the deserts, or fissures in the rocks. [7]

Grape. The records of the cultivation of the grape and of the making of wines in Egypt go back five to six thousand years. In the West the propagation of grape culture by the Phœnicians, Greeks, and Romans is pretty well known, but in the East of Asia grape cultivation began at a later period. The Chinese began to cultivate the grape in 122 B.C. Seeds of grapes have been found in the lake dwellings of Casione, near Parma. These dwellings date from the Bronze Age. [7]

Peach. The peach was found wild in Persia, the Crimea, and in the south of Caucasia. De Candolle after a most careful study concludes that its natural home is China and it is probable that the stones were carried over the mountains from the center of Asia to Kashmir, Bokhara, and Persia by the Chinese, who early discovered this route. The Japanese call the peach tree Tao. The Tao occurs in the writings of Confucius in the fifth century before the Christian era, and even in the ritual in the tenth century before Christ. The expeditions of Alexander were probably the means of making it known to Theophrastus in 332 B.C., who speaks of it as a Persian fruit. The Greeks and Romans received it shortly after the Christian era, as is proved by the peach stones found in the lake dwellings of Parma and Lombardy, and by the representation of the peach tree in paintings on the walls of the richer homes of Pompeii. [7]

Apricot. The apricot grows wild in the mountains of Pekin. The Chinese knew it 3000 to 2000 years B.C. De Candolle believes it to be native to China. Its culture spread into the West very late; it was not until shortly after the Christian era that it spread toward the Græco-Roman world. A century earlier Chang-kien traveled from China into the West, and it is then, perhaps, that the apricot was introduced into Western Asia and became naturalized. [7]

Watermelon. De Candolle believes that the watermelon originated in southern Asia, because of its general cultivation there. It is of great antiquity in Northern Africa, and Livingstone saw districts literally covered with watermelons. The ancient Egyptians cultivated the watermelon, which is represented in their paintings. This is a reason for believing that the Israelites knew the species and called it "abbatichim." It was also known in India as is proved by the fact that there is a Sanskrit name for it. It was not known in China until the tenth century of the Christian era. The watermelon entered the Græco-Roman world about the beginning of the Christian era. The Europeans introduced it into America. [7]

Apple. The apple tree has existed in both wild and cultivated state in Europe and Asia from prehistoric times. [7]

Quince. This fruit is a native of the Island of Crete. An idea of its antiquity in Greece also may be gained from the superstitions mentioned by Pliny and Plutarch—that the quince was a preservation from evil influences, and from its entrance into the marriage rites prescribed by Solon. Some authors state that the apple disputed by Hera, Aphrodite, and Athene was a quince. The quince tree appears twice in the frescoes at Pompeii. It was naturalized in Europe before the epoch of the Trojan War. [7]

Pear. The pear is a native of the woods of temperate Europe and Asia. It frequently figures in the mural paintings of Pompeii; Homer, Theophrastus, and Dioscorides mention it; and it was cultivated in great quantities in Pliny's time. [7]

Banana. De Candolle states that the banana originated in the Malay Archipelago and from there spread to India. There are several Sanskrit names for it. The Greeks, Latins, and Arabs spoke of it as a remarkable Indian fruit tree. Pliny states that the Greeks saw it in India during Alexander's expedition. Its botanical name Musa Sapientum was given, because the sages reposed beneath its shade and ate of its fruit. It is said to have been taken to America by Europeans, but this fact is disputed by Humboldt and Roussingault. [7]

B. Cultivated for More Than 2,000 Years

Garden pea. This vegetable grew wild in Western Asia, perhaps from the south of Caucasia to Persia, before it was cultivated. The Aryans introduced it into Europe. There is no indication of its cul-

ture in ancient Egypt or in India. It was introduced into China from Western Asia. [7]

Carrot. The carrot is found wild in Europe and Western Asia. In the cultivated state it was introduced into England by Flemish refugees in the reign of Elizabeth. There it became so popular in the next reign that the ladies wore carrot greens instead of feathers in their hats. [7]

Celery. Over a very wide area celery grows wild. It is spoken of in *The Odyssey* under the name of "selinon," and is mentioned by Theophrastus; later Dioscorides and Pliny distinguished between the wild and the cultivated celery. [7]

Lettuce. It is considered a descendant of wild lettuce a native of southern Europe and of central and eastern Asia. It was used as a salad by the ancient Greeks and Romans, who cultivated it. In China it was first mentioned in writings between 600 and 900 A.D. [7]

Asparagus. According to Hackwood, asparagus is native to Asia. The Romans cultivated it with such marvelous success that the stalks raised at Ravenna are said to have weighed three pounds each, while the African variety, grown in Libya, reached a height of 12 feet. [11] De Candolle believes it originated in Great Britain. [7]

Sour Cherry. The origin of the sour cherry, according to De Candolle, was probably Western Asia. The cherry is spoken of as "cerasis" in Vergil. (Georgics, ii:17)

"Pullulat ab radice aliis densissima silva
Ut cerasis ulmisque—"

Cultivated Plum. The plum grows wild in Western Asia. It was introduced into Europe through Greece and Italy. [7]

C. Cultivated Less Than 2,000 Years

Parsley. Parsley is a native of southern Europe. Dioscorides and Pliny speak of it as a wild medicinal plant. It was one of the plants Charlemagne ordered cultivated in his garden during the Middle Ages. From Sardinia it was introduced into England. [7]

Spinach. This vegetable is a native of Persia. Its cultivation began in Europe in the fifteenth century and in China a century before the Christian era. [7] New Zealand spinach was brought from New Zealand at the time of Cook's famous voyage. [32]

Artichoke. The artichoke is a native of southern Europe. It was

brought into Florence from Naples in 1466 and to England in 1548. [7]

Oranges. The ancient Greeks and Romans knew nothing of oranges. The sweet orange came from China and was introduced into Northern India at the beginning of the Christian era. There is one theory that it came from the bitter orange at some remote epoch. Orange trees were brought from India by the Arabs into Palestine, Egypt, the east coast of Africa, and the south of Europe. Up to the fifteenth century Arabian books and chronicles spoke only of the bitter orange, but apparently the sweet oranges were known, because the Florentine who accompanied Vasco da Gama, and published an account of the voyage says: "There were plenty of oranges, but all sweet." Gallesio implies that the Portuguese were not the first to bring sweet oranges from India, which they reached in 1498, nor from China, which they reached in 1518. De Candolle believes that the sweet oranges the Portuguese found in China were only a better grade than they had previously known. [7]

Lemon and grapefruit. These fruits are native to India and southern China, respectively. [7]

Strawberry and gooseberry. These fruits are native to temperate Europe. They were cultivated in the sixteenth century.

Currant. The red and black currants are native to Europe and were cultivated in the Middle Ages. [7]

Sweet Potato. It is not known when sweet potatoes were introduced into Europe. They were imported from Spain and Portugal to England in the reign of Queen Elizabeth. It was these tubers which were meant by Shakespeare when, in *The Merry Wives of Windsor*, he makes Falstaff exclaim: "Let the sky rain potatoes and hail hissing comfits." [32] The plant is a native of the Malay Archipelago, where it formerly grew wild in the woods. But the place of its origin is unsettled. De Candolle firmly believed that it was of American origin, because 15 species were found in America. Humboldt says that it was among the offerings of Columbus to Queen Isabella, of the products of the new world. Other arguments point to Asiatic origin. Greitschneider has proved that it was known in China at the beginning of the Christian era. But whether it was a native of the New or Old World, it is difficult to explain its transportation from America to China, or vice versa, at the beginning of our

era, or from Asia or Australia at a time sufficiently remote for its cultivation to have been early diffused from the southern portion of North America to Chili and Brazil, unless we assume a prehistoric communication between Asia and America, which is not applicable to the case. [7]

Potato. De Candolle states that the potato grows wild in Chili; and it is doubtful whether its natural home extends from Mexico, to Peru, and New Granada. Potatoes were cultivated early, and were diffused before the discovery of America, from Chili to New Granada. They were introduced in the latter part of the sixteenth century into Virginia and the Carolinas. They were brought into Europe between 1580 and 1585, first by Spaniards and later by the English, at the time of Raleigh's voyage to Virginia. [7]

Pumpkin, squash, and vegetable marrow. There are about 50 varieties of these and they are believed to be of American origin.

Tomato. The tomato is a native of South America and Central America. It was first cultivated in Peru, but it grows wild in the West Indies. [7]

Pineapple. This fruit is native to South America where it is called "nana." It was introduced by Europeans into Asia and Africa after the discovery of America.

Avocado or alligator pear. The avocado is native to Mexico, and it also grows in the West Indies. [7]

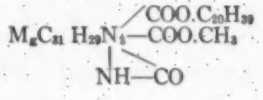
II. VEGETABLE PIGMENTS AND THE BEST METHOD OF COOKING IN ORDER TO RETAIN GOOD COLOR

The attractive and pleasing colors which vegetable and fruit pigments contribute to our diet may be grouped into two main classes. On one hand are the green chlorophylls and the yellow carotinoids, and on the other hand are the soluble sap pigments in which many well defined groups are known—notably the yellow flavonols and the highly colored anthocyanins.

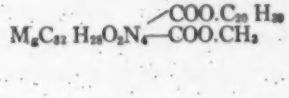
The green pigments are contained in certain cells called chloroplasts. The chloroplasts consist of an intricate sponge work of proteous substance and innumerable and minute interstices filled with an oily substance. The green pigment exists in the form of an emulsion in this oily substance, and is concentrated toward the outer surface. [34]

The chemical constitution of green pigments of plants was shown in 1912 by Willstatter to consist of two definite chemical compounds, for which he designed the names "chlorophyll a" and "chlorophyll b," associated with two yellow pigments, carotin and xanthophyll. The two chlorophylls have the following formulas: [37]

"Chlorophyll a"



"Chlorophyll b"



"Chlorophyll a" differs from "chlorophyll b" by one less oxygen and two more hydrogen atoms in the molecule, and one of its nitrogen atoms is in the "lactam" arrangement. [37, 34]

The chlorophylls, the green coloring substance of vegetables, are almost insoluble in water but are unstable compounds, readily acted upon by acids, alkalies, heat, and the enzyme chlorophyllase, which splits off the phytol alcohol group ($C_{20}H_{39}OH$). [37, 34]

Vegetables and fruits contain organic acids, or their derivatives, which impart to them desirable flavors and odors. In the cooking of green vegetables in a covered pan or in a pressure cooker volatile acids given off have no opportunity to escape; they drop back on the vegetables and the desirable green color changes into a brownish green. The manganese group in the chlorophylls is very sensitive to acids, but it is uncommonly stable against alkalies. The action of dilute acids on the chlorophylls is to remove the magnesium, without otherwise changing the molecule. Two hydrogens go in in place of the magnesium, forming a substance of olive color called "phæophytin a" and "phæophytin b." [37, 34, 13]

That decomposition of green pigment in vegetables is destroyed at a more rapid rate by acid at higher temperatures has been shown by a comparative study of the rate of change caused by heat and acid on chlorophyll isolated from spinach leaves. In a slightly acid (pH 5.4) chlorophyll solution at 22° to 24° C. (room temperature) the color remained good for 30 minutes while at 90° to 92°C. the color remained good only 2 minutes. However, when the chlorophyll solution was slightly alkaline (pH 8.2) at 20° to 22°C. the color remained good for 48 hours while at 90° to 92°C. the color remained good for only 50 minutes. [12]

In the above study it was noted that chlorophyll remained green longer in a slightly alkaline solution. The addition of alkali in the form of baking soda or sodium bicarbonate accentuates the green coloring matter in vegetables. The addition of too much soda not only intensifies the green color but it also makes the vegetables soft and slimy and tends to decompose the chlorophylls and to destroy the vitamins. [12, 32]

The magnesium group in the chlorophylls is stable toward alkalies, but long boiling in dilute alkalies causes hydrolysis and splits off the alcohol groups of the esters, producing the tribasic acids, or chlorophyllins a and b. These, when heated with alkalies, split off carbon dioxide in successive stages, losing one COOH group at each step, thus yielding a series of simpler compounds of the following types; first dibasic acids; second monobasic acids; and finally, aetiphyllin, a compound in which no COOH group is present ($MgC_{31}H_{34}N_4$). [34, 37]

The characteristic green color of vegetables is due to the presence of two or more yellow pigments associated with the dark bluish green of the chlorophylls. When the green pigments are impaired by cooking we have only a small portion of the chlorophyll pigments plus the yellow pigments, which accounts for the yellow-brown-green color. [34]

The best method of cooking green vegetables in order to preserve their color is to drop them into an open kettle of rapidly boiling water and cook them the shortest time possible to render them edible. Some green vegetables—spinach, for instance—are cooked a very short time with only the water that adheres to the leaves after washing. However, if the cooking of vegetables requires a longer time more water should be used than is absolutely necessary to cook them in order to neutralize the acids present. [12]

The best known yellow pigments—found in carrots, squash, sweet potatoes, yellow corn, milk, grain, beef fat, and egg yolk—are carotin and xanthophyll. They are very similar in their chemical composition. Carotin ($C_{40}H_{56}$) and xanthophyll ($C_{40}H_{56}O_2$) are yellow pigments while licopin ($C_{40}H_{56}O_6$) is the red pigment formed in red tomatoes and red peppers. [34]

The carotinoid pigments are almost insoluble in water and stable to heat, acid, and alkalies. The yellow vegetables can be cooked in a

small amount of water, in a steamer or pressure cooker, or baked without damage to the color. [12]

The red vegetables are not plentiful, but are limited to beets, red cabbage, and radishes. The red coloring matter in vegetables belongs to a group of pigments called anthocyanins. The anthocyanins differ slightly in chemical composition and in color reactions, but they are all highly soluble in water. The anthocyanin itself is an acid and in free state is purple. With acids the anthocyanins invariably turn a bright red; with alkali the solution turns blue, sometimes green, and finally yellow. The different color reactions obtained with acids and alkalies may be due to other glucosides which are universally present in plants. The water soluble yellow pigments, xanthone, and flavone derivatives are colorless isomers with anthocyanins. Most of the pure anthocyanins with alkalies give blue while the colorless isomers give yellow or orange; hence, blue plus yellow results in green. The blue salts are unstable in presence of excess alkali and change into a greenish and even a yellow decomposition product. With iron salts the flavones change the color to green or brown. [36, 34]

Beets are acid in reaction and if they are not cut up or pared, they can be cooked in any kind of water without adding extra acid and still have good color. Red cabbage does not stay red during cooking unless extra acid is added in the form of vinegar, lemon juice, or tart apples. Without acid the color changes to purple in neutral cooking water and green in alkaline waters. [12]

Anthocyanin pigments occur in many fruits such as plums; blueberries, blue grapes, cranberries, red apples, etc. In the cooking of these fruits color changes occur. [36, 34] If the fruit juice is more acid than the original color-bearing part, blue fruits turn bright red in color. Canned fruits, on the other hand, may turn blue or purple when tin containers are used. This color change is due to the reaction between the anthocyanin pigments of the fruit and the tin of the can. [8]

The best method of cooking red vegetables in order to preserve their color is the reverse of the best method of cooking green vegetables. The addition of, or presence of, acid favors the retention of the red color, while metals and alkali cause undesirable changes. [12]

The white vegetables, with very few exceptions, contain some pigments. Some contain carotinoids which are not affected by cooking

while others contain pigments which, in the presence of alkali, turn a pleasant yellow. This yellow pigment is called flavone. It is present in such vegetables as white onions with slight yellow tinge. It is highly soluble in water, and in the presence of dilute acid solution, or if present in a low concentration, it is almost colorless, but gives the vegetables and the cooking water a very decided yellow tinge in the presence of a small amount of alkali (as in tap-water), and brown or green in the presence of iron. [34, 36]

Unpleasant color changes take place in white vegetables only when they have been cooked too long. These unpleasant color changes are not fully understood at the present time. It has been suggested that the flavones may be changed in the process of cooking by contact with iron in the vegetable, to their near relatives the anthocyanins; or that iron and sulphur in the vegetables form a dark compound, etc. [12]

The best method of cooking white vegetables in order to preserve their whiteness is to cook them only until tender. As cabbage and onions both belong to this group, cooking in a larger amount of water will not only prevent darkening but will also tend to prevent development of bad taste and odor. [12]

III. THE IMPORTANCE OF VEGETABLES

The composition of fresh vegetables varies greatly. They are often regarded as of low nutritive value because of their high water content and low proportions of protein and fat. But it is this property which makes them especially important as sources of mineral elements and vitamins, because they can be added to the diet without replacing the staple foods of high caloric value and without making the total food consumption excessive. [32]

Flavor and Losses in Cooking

The flavors of fruits and vegetables are due to the presence of sugar, organic acids, mineral salts, and aromatic compounds. [34]

Young corn and peas when freshly gathered have a sweet flavor, but when they are allowed to stand they become less and less desirable in proportion to the length of time they are kept on hand before being used. This is due to the presence of enzymes in the vegetables which change the sugar to starch in an effort to mature

the seeds. The changes are more rapid at higher temperatures; therefore these vegetables have a much better flavor when cooked directly after they have been gathered. [1, 2]

Investigations have also shown that climatic conditions affect the flavor of apples. In seasons of long-continued sunshine and warmth apples contain a high sugar content and high acidity accompanied by a low astringency or low tannin content. [6]

It has been found that the volatile flavor in grapes is almost equally distributed in the pulp and the skins. This volatile substance is anthranillic acid ester and it tends to disappear from the grape juice during storage. This fact may explain the loss of flavor of stored grape juice. [30]

Organic acids are widely distributed in plants, either in a free form, or partially neutralized with calcium, potassium, or sodium, forming acid salts, or combined with various alcohols in the form of esters. They occur in the largest proportions in the fleshy tissues of fruits and vegetables, where they are responsible for the flavors which make the products attractive food for men and animals. In organic acids the hydrogen of the carboxyl group may be replaced by metals producing either an acid salt or a neutral salt, depending upon whether all or only a part of the acid hydrogen atoms are replaced by the metal. [34] While the above changes are always going on in fruits and vegetables, they may also occur during cooking. The minerals, the organic acids, and the metal of the container may form salts which alter the flavor of the food and which may also discolor it.

Certain vegetables—the cabbage family, for instance—contain an essential oil with sulphur in the form of isosulphocyanide (C_3H_5NCS) while onion, garlic, water cress, radishes, etc., contain allyl sulphide $(C_3H_5)_2S$. The difference in flavor of these vegetables is due to the fact that the allyl sulphide is united with other different groups in a glucoside arrangement in different plants. Mustard oil or isosulphocyanide also exists as a glucoside in cabbage, Brussels sprouts, and turnips. [34, 15] These vegetables, when overcooked, develop very undesirable flavors and odors due to the breaking down of the glucoside or the formation of other compounds. This is brought about by slow cooking in the presence of mineral acids and a small amount of water. This gives the enzyme an ex-

cellent opportunity to break down the sulphur compound into glucose, potassium acid sulphate and allyl thiocyanate. The latter, a volatile compound with a pungent odor, may itself be decomposed into hydrogen sulphide. [34, 12, 15]

The best method of cooking members of the cabbage family in order to retain their color, delicate flavor, and texture is in a large amount of water in an uncovered vessel, for the shortest time possible. This method will leave no objectionable odors such as are left when the vessel is covered. [12]

Vegetables of a delicate flavor should be cooked in a small amount of water, baked, or cooked in a waterless cooker, or steamed. If all the water in which the vegetables have been cooked is used either with the vegetable or in soups or gravy no flavor will be lost. [12]

The texture and flavor of the vegetables are improved if salt is added to the cooking water before the vegetables are put in or after the first half of the cooking process. [17]

Recent Studies on Mineral Content of Vegetables

In a recent investigation of the iron content of 150 common foods it was found that the soil and climatic conditions largely determine the iron content of the plant as was shown by the great variations which exist in different samples of the same plant material; for example, apples, string beans, and cabbage. One sample may contain 2 or 3 times as much iron as another sample of the same product. It was found that the iron content of food varies from 0.00015 per cent for lemon juice to 0.0192 per cent for parsley. When the calculations are made on the dry basis the leafy vegetables take the first place with more than six times as much iron as is found in the dried legumes. There appears to be a direct relationship between the iron content and presence of chlorophyll. Cabbage, celery, and head lettuce contain a low percentage of iron compared with the greener vegetables. [29]

It was also noted that iron has a tendency to cling to the solid part of the material. When orange juice was pressed out and strained, only 25 per cent of the total iron was obtained, although more than 60 per cent of the weight of the orange pulp was represented by the juice. Tomato juice similarly prepared contained about 38 per cent of the iron in the original vegetable. This same ob-

servation had previously been made on beef juice—that it contained only a small percentage of the total iron of the original beef. [29]

The mineral constituents of cranberries have recently been investigated. They contain 88.44 per cent water, and 0.158 per cent ash. [22]

Investigations on the iodine content of vegetables and fruits show that the leafy vegetables and whole meal products are rich in iodine while fruits and root vegetables are low. The amounts of iodine found in foods vary widely with the iodine content of the soil, the season, different parts of the plant, and the species of plant. The available iodine content in the soil is of much greater importance in determining the iodine content of the plants than is any other factor. Comparisons of goitrous and non-goitrous regions show a higher iodine content in foodstuffs and a richer iodine content of the soil in the non-goitrous regions. [14] There is a seasonal variation in the iodine content of foods—a minimum during the greatest period of growth of the plant with a maximum in the late autumn and winter. [25] Iodine is not equally distributed throughout the different parts of the plant. In wheat grains the iodine is concentrated in the seed coat, and leaves of beets contain relatively more iodine than the tubers do. This is equally true of other roots like beets, which act as a storage place for carbohydrates; the concentration of iodine is very low in radishes. [25] Cape Cod cranberries have been found to be relatively high in iodine content. [21]

Leafy vegetables leave two-thirds of their iodine content in the cooking water. There is, however, practically no loss of iodine in the cooking of root vegetables. [14] In a study of the iodine content of iodized salts stored for 35 months it was found that they had lost practically all their iodine. The loss of iodine was found to have been accelerated by heat and by sunlight. [24]

Losses of Mineral Content in Cooking

The fact that the cooking processes have a marked effect on the chemical constituents of vegetables has been brought out by a study on different methods of cooking 16 vegetables. The following methods of cooking the vegetables were used: (1) Boiling in just enough water to cover the surface; (2) boiling in twice this amount of water; (3) steaming; and (4) cooking in a steam pressure cooker.

The time for cooking was usually 30 minutes for the boiled, 40 minutes for the steamed, and 15 minutes for the pressure cooked samples. [28]

AVERAGE LOSSES OF DRY MATTER, PROTEIN, AND MINERALS FOR ALL VEGETABLES [28]

METHOD OF COOKING	DRY MATTER	PROTEIN	CALCIUM	MAGNESIUM	PHOSPHORUS	IRON	MANGANESE [23]
	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent
Boiling (1)	27.1	31.3	20.3	31.8	31.8	40.1	21
Boiling (2)	39.4	43.0	31.9	44.7	44.7	48.0	36
Steaming	14.0	16.0	10.7	18.6	16.7	21.3	11
Pressure cooking	16.1	19.1	12.0	21.1	19.4	17.4	22

In general the smallest loss of mineral content occurs when the vegetables are steamed; and the greatest, when they are boiled in an excessive amount of water. Certain vegetables show particularly large losses, especially the leafy vegetables which have a large surface exposed to the cooking water such as cabbage, spinach, celery, beet greens, and also some of the roots and bulbs such as turnips and onions. Spinach shows a retention of calcium; it is believed that the calcium in spinach is in an insoluble form. The magnesium in spinach, unlike the calcium, is readily soluble and large percentages are lost in cooking. Cabbage shows large losses of calcium and magnesium while cauliflower, so closely related, retains these minerals to a greater degree. Among the greatest losses of minerals is that of iron. [28] Potatoes lose about one-fifth of their iron content in cooking; peas and beans between one-third and one-half; and spinach one-half. [5]

The addition of salt and its effect upon the loss of iron in cooking vegetables has been studied. The result showed an increase in the loss of iron when salt was added. [31]

Cooking of Dried Beans and Peas

Experiments have shown that the hardness of dried beans and peas depends on their resistance to penetration of water. The

greater the quantity of water that can be absorbed the more easily cooked are the beans and peas. The process of cooking is rendered slower by all substances that reduce and retard their absorbing power. The use of hard water containing calcium and magnesium salts has a hardening effect on ripe beans and peas. [9, 4] Dried beans and peas soaked in soft or distilled water require less time to cook than those soaked in hard water and are also more tender and have a better flavor and color than those soaked in hard water. When hard tap-water is used better results are obtained by the use of small amounts of sodium bicarbonate. The presence of small amounts of sodium bicarbonate hastens and increases the absorbing power of the colloids present in the beans and peas and tends to restore them to normal condition. Increasing amounts of alkali in the tap-water used for soaking and cooking the beans and peas cause the protein nitrogen to appear in the ammoniacal form and also causes a loss of minerals. [18] The method suggested for cooking dried beans is either to soak them overnight in soft water or for four hours in a one per cent sodium bicarbonate solution (1/3 ounce sodium bicarbonate to one quart of water, using one quart of water for each pound of dried beans). The drained beans are placed in a pan with one quart of boiling water to each pound of beans (containing 0.25 per cent salt—¼-½ ounce—to a gallon of water) covered and steamed for an hour and a half, or twice the amount of water is used and the beans are boiled in a covered pan for one hour. [19] It is important to cook older beans apart from comparatively fresh ones because they require a much longer time to cook.

Several valuable studies could profitably be made on the losses of minerals by allowing peeled potatoes and other vegetables to stand cut up for hours before they are cooked and throwing this water away.

The Vitamin Content of Fruits and Vegetables, and Losses in Cooking

"Vitamin A is formed in the green leaves of plants and these are richer in this vitamin than any other part of the plant." [32] In general, vitamin A is found in the actively functioning parts of the plant, and certain storage organs such as yellow corn or sweet potatoes are found to be richer in this vitamin than are white corn or white potatoes, and carrots are richer in it than are parsnips or beets. Vitamin C, like vitamin A, is found in the actively functioning and

succulent parts of plants, in fresh green leaves, the growing shoots, and the juicy stems, roots, tubers, bulbs, and fruits, but not in the mature seeds. Vitamin B appears in relative abundance in all the chief organs of plants—leaves, stems, roots, tubers, seeds, and fruits. [32]

Losses of Vitamins in Cooking

Vitamin A. The destruction of vitamin A during the cooking process is very slight. Quantitative experiments have indicated a destruction of about 18 per cent of vitamin A in tomato juice when heated to approximately 100°C. for four hours, and careful experiments, with and without rigorous exclusion of oxygen, showed that oxidation is less destructive of vitamin A in the form in which it occurs in vegetables than in aërated fats. [32]

Vitamin B. The data here represented are on vitamin B complex as we have at the present time no definite data on the destruction of vitamins B and G, respectively. The destruction of vitamin B by heat is not nearly so great as the destruction of this vitamin by decrease of acidity. "The average figures for destruction of vitamin B in canned tomato juice at its natural acidity were found for a period of four hours to be as follows: at 100°C., 20 per cent; at 110°C., 33 per cent; at 120°C., 47 per cent; and at 130°C., 55 per cent." [32]

"The destruction of vitamin B due to one hour's heating at 100° C. at different concentrations of hydrogen ion was as follows: at pH 5.2, about 10 per cent; at pH 7.9, 30-40 per cent; at pH 9.2, 60-70 per cent; and at pH 10.9, 90-100 per cent." The destruction of vitamin B is thus found to increase with decreasing acidity or increasing alkalinity of the solutions and also with the time of heating. [32]

Vitamin C. This vitamin is destroyed by heat, and the destruction also becomes greater the longer the heating is continued. "In the case of tomato juice of natural acidity boiling for one hour destroyed practically 50 per cent, and boiling for four hours destroyed 68 per cent of the antiscorbutic vitamin. At a lower temperature there was less destruction at a given time: at 60°C., 35 per cent; at 80°C., 52 per cent; at 100°C., 68 per cent when the temperatures were maintained for four hours." [32]

Heating with strict exclusion of oxygen reduced the losses of vitamin C materially, but this is not possible in the home. [32]

Vitamin C is more readily destroyed in an alkaline than in an acid solution; and even a slight decrease of the acidity means that a greater percentage of the vitamin is destroyed. "Thus tomato juice, which lost 50 per cent of its vitamin C in one hour at 100°C. at natural acidity, lost 58 per cent under the same treatment when it had been about one half neutralized, and about 65 per cent when it had been made faintly alkaline." Therefore the best conservation of the antiscorbutic vitamin value of the food also demands avoidance of the use of soda or other alkali in cooking. [32]

In a study of the vitamin C content of baked aples and apple sauce it was found that all the vitamin C was destroyed. [16] However, it was found that the baking of bananas in the skin is an efficient method of protection against destruction of the antiscorbutic vitamin. [10]

Summary: From the data presented it is very evident that there is no one method of cooking all fruit and vegetables which will retain the good color of the pigments, preserve the minerals and vitamins, develop and retain the flavor and texture. Baking in the oven or in a waterless cooker on the top of the stove or steaming is an excellent method for preparing the yellow vegetables. For instance, sweet potatoes when cooked for a long time deepen in color and become juicier. This is probably due to the fact that starch is made more soluble by the heat, while cane sugar is split into simpler sugars. Applying this method to the preparation of the members of the cabbage family, turnips, and onions, would give products of less pleasing colors, odors, and taste. In this case boiling until just tender in a larger amount of water gives a product of a pleasing flavor and of a delicate texture. If all the water is used either in soups or in sauces no flavor or minerals need be lost. The addition of a small amount of alkali to the green pigmented vegetables intensifies their color, but this addition to the red pigmented vegetables causes them to turn purple and finally a bronze green color, and in the white vegetables where flavors are present a decided yellow tinge develops. It also tends to increase the destruction of the vitamins. The addition of acid to the green pigmented vegetables causes them to turn bronze-green in color, while this addition to

the red vegetables intensifies their coloring and there is less destruction of vitamins in an acid solution. However, it is far better to prepare a food that is pleasing to the eye and one which tastes as good as it looks, for if the food is pleasing more of it is eaten.

BIBLIOGRAPHY ON FRUITS AND VEGETABLES

1. Appleman, C. O. "Carbohydrate Metabolism in Green Sweet Corn during Storage at Different Temperatures." *Journal of Agricultural Research*, Vol. 17, p. 137 (1919).
2. Benoy, M. P. "The Respiration Factor in the Deterioration of Fresh Vegetables at Room Temperature." *Journal of Agricultural Research*, Vol. 39, p. 75 (1929).
3. Bigelow, W. D. and Dunbar, P. B. "The Acid Content of Fruits." *Journal of Industrial and Engineering Chemistry*, Vol. 9, p. 762 (1917).
4. Bigelow, W. D. and Stevenson, A. E. "The Effect of Hard Water in Canning Vegetables." *National Canners' Association Bulletin* No. 20-L (1923).
5. Blunt, K. and Otis, F. A. "Losses of Iron in Cooking Vegetables." *Journal of Home Economics*, Vol. 9, p. 213 (1917).
6. Caldwell, J. S. "Chemical Composition of Apple Juices as Affected by Climatic Conditions." *Journal of Agricultural Research*, Vol. 36, p. 289 (1928).
7. Candolle, A. De. *Origin of Cultivated Plants.* D. Appleton and Company (1902).
8. Culpepper, C. W. "The Behavior of the Anthocyan Pigments in Canning." *Journal of Agricultural Research*, Vol. 35, p. 107 (1927).
9. Dominicis, A. De. "Experimental Researches on the Factors Which Determine in Legumes Resistance to Cooking and on Agents Used to Modify It." *Chemical Abstract*, Vol. 17, p. 338 (1923) and Vol. 18, p. 131 (1924).
10. Eddy, W. H. and Kellogg, M. "The Place of the Banana in the Diet." *American Journal of Public Health*, Vol. 17, p. 27 (1927).
11. Hackwood, F. W. *Good Cheer.* Sturgis and Walton Co. (1911).
12. Halliday, E. G. and Noble, J. T. *How's and Why's of Cooking.* The University of Chicago Press (1928).
13. Heibron, I. M. "Plant Pigments." *Journal of Sociological Chemistry Industry*, Vol. 43 T, p. 89 (1924).
14. Hercus, C. E. and Roberts, K. C. "The Iodine Content of Foods, Manure, and Animal Products in Relation to the Prophylaxis of Endemic Goiter in New Zealand." *Journal of Hygiene*, Vol. 26, p. 49 (1927).
15. Kohman, E. F. "Method of Determining Hydrogen Sulphide Evolved by Foods When Cooked at Various Temperatures." *Journal of Industrial and Engineering Chemistry*, Vol. 14, p. 527 (1922).
16. Kohman, E. F., Eddy, W. H. and Carlsson, V. "Vitamin C Destructive Factor in Apples." *Journal of Industrial and Engineering Chemistry*, Vol. 16, p. 1261 (1924).

17. LANMAN, F. R. AND MINTON, E. S. "The Effect of the Use of Salt in Cooking Vegetables." Bulletin 406, Ohio Agricultural Experiment Station (1927).
18. MAREL, VAN DER, J. B. "The Causes of the Hardening of Peas During Boiling." *Pharmaceutisch Weekblad*, Vol. 59, p. 82 (1922).
19. MASTERS, HELEN. "An Investigation of the Methods Employed for Cooking Vegetables with Special Reference to the Losses Incurred in Dried Legumes." *Journal of Biochemistry*, Vol. 12, p. 231 (1916).
20. MITCHELL, J. H. "A Study of Iodine in South Carolina." *Science*, Vol. 69, p. 1799 (1929).
21. MORSE, F. W. "The Iodine Content of Cape Cod Cranberries." *Journal of Biological Chemistry*, Vol. 79, p. 409 (1928).
22. MORSE, F. W. "The Mineral Constituents of Cranberries." *Journal of Biological Chemistry*, Vol. 81, p. 77 (1929).
23. MUNGER, S. AND PETERSON, W. H. "The Manganese Content of Raw and Cooked Vegetables." *Journal of Home Economics*, Vol. 20, p. 194 (1928).
24. NICHOLS, M. S. AND FELLOW, A. P. "The Deterioration of Iodized Salt." *Journal of Public Health*, Vol. 19, p. 923 (1929).
25. ORR, J. B. AND LEITCH, I. "Iodine in Nutrition." *Medical Research Council Special Report, Series No. 123* (1929).
26. PALMER, L. S. *Carotinoids and Related Pigments the Chromolipoids.* The Chemical Catalogue Co. (1922).
27. PARSON, H. T. *Losses of Vitamin B in Vegetable Cookery.* Bulletin 388, Wisconsin Agricultural Experiment Station (1926).
28. PETERSON, W. H. AND HOPPERT, C. A. "The Loss of Mineral and other Constituents from Vegetables by Various Methods of Cooking." *Journal of Home Economics*, Vol. 17, p. 265 (1925).
29. PETERSON, W. H. AND ELVEHJEM, C. A. "The Iron Content of Plant and Animal Foods. *Journal of Biological Chemistry*, Vol. 78, p. 215 (1928).
30. SALES, J. W. AND WILSON, J. B. "Distribution of Volatile Flavor in Grapes and Grape Juices." *Journal of Agricultural Research*, Vol. 33, p. 301 (1926).
31. STEINBARGER, M. C. *The Effect of Salt on the Loss of Iron in Cooking Vegetables.* Data taken from Reference No. 17.
32. SHERMAN, H. C. *Chemistry of Food and Nutrition.* The Macmillan Company. (1926).
33. SIMPSON, J. AND HALLIDAY, E. G. "The Behavior of Sulphur Compounds in Cooking Vegetables." *Journal of Home Economics*, Vol. 20, p. 121 (1928).
34. THATCHER, R. W. *Chemistry of Plant Life.* McGraw-Hill Book Company, Inc. (1921).
35. TIBBLES, W. *Foods: Their Origin, Composition, and Manufacture.* Bailliere, Tindall and Cox (1912).
36. WHELDALE, M. *The Anthocyanin Pigments of Plants.* Cambridge University Press (1916).
37. WILLSTATTER, R. "Chlorophyll." *Journal of the American Chemical Society*, Vol. 37, p. 323 (1915).

NEW STUDIES IN EDUCATION

PHYSICAL EDUCATION FOR THE PREPARATION OF GENERAL ELEMENTARY SCHOOL TEACHERS *

A STUDY OF CONTENT AND REQUIREMENTS OF COURSES OF PHYSICAL EDUCATION IN TWENTY-TWO STATE TEACHERS COLLEGES AND NORMAL SCHOOLS DURING 1926-27.

PROGRESS depends on realization of where we stand, on desire for improvement, and on definite goals toward which to strive. This dissertation aims to contribute, primarily, to the first of these requirements in the preparation of elementary school teachers to conduct physical education activities in the grades. Investigation was made of subject matter and organization of courses, including observation, participation, and practice teaching as they applied to physical education. Data were collected in personal interviews with fifty-six instructors and the principals or presidents of twenty-two state teachers colleges and normal schools.

FINDINGS

The findings of common practice in 50 per cent of the institutions reveal three outstanding facts in regard to the organization of courses. (1) A total of 140 hours emerges as the time allotted for the whole program of physical education as it is found in the first two years of any curricula. (2) Nineteen hours of that total were given to lecture or class discussion, while the remainder of the time was devoted to practice. (3) No true differentiation of course was found except for kindergarten-primary students in 4, or 18 per cent, of the institutions. Other courses contained activities for not less than six grades.

The activities most frequently checked as future teaching material were games of low organization, story-plays, and folk dancing, but a detailed study of the topics taken up in class lecture or discussion shows that gymnastics topics were selected more than twice as frequently as were those for all types of games or of dancing. Furthermore, a greater percentage of topics on basketball were used than for any other sport, or even for games of low organization. The game topics which were selected most frequently were general discussions not related to any particular sport or to the group of games of low organization.

In general, the author found more frequent selection of topics relating to material than of topics dealing with organization and leadership of children in their physical education activities.

* By Emily Dean Jameson, Ph.D. Teachers College, Columbia University, Contributions to Education, No. 402.

VALUE AND RECOMMENDATIONS

The value of the picture of course content and organization during 1926-27 as a foundation for future plans and practice lies first in the extensive lists of specific activities and of topics for classroom discussion which are conveniently organized into related groups and then ranked according to frequency of occurrence in the institutions studied. Second, common practice as found in 50 per cent of the institutions is offered as a practical minimum recommendation by this group of schools for course content and organization for similar institutions. The findings do not necessarily set forth all the educational ideals of the instructors, but they do represent what a group of trained individuals saw fit to teach under the conditions as they found them. Third, as scientific goals for teachers colleges are worked out, these lists of ranked activities and topics for discussion will show up discrepancies which will indicate where first steps may most profitably be taken to strengthen the institutions at their weakest points.

The findings regarding the relative offerings of institutions of different types are of importance to administrators of institutions preparing teachers of the elementary grades. In every case in this study, institutions which offered a major in physical education entirely omitted large portions of course content and much valuable experience, usually including practice teaching, which in institutions without such a major were given to elementary grade teachers. From this finding, the conclusion is drawn that if a major department in physical education cannot be maintained without sacrificing grade-teacher preparation, such departments should be left to universities.

PERSONAL HYGIENE FOR COLLEGE STUDENTS *

WHAT do college students want to know about health? This is the central question which finds an answer in the compilation of data in this study. The writer has explored health interests and problems of college students over a period of five years. Students' questions are listed in detail, topically arranged, and may serve as quite desirable bases upon which to build a course of study or syllabus.

The results and implications of the study may be summarized as follows:

1. The personal needs of students, in so far as they may be discovered by recording the questions which students ask, are revealed. The actual questions are recorded, in detail, for any subject usually included in a personal hygiene course. A discussion of suggestions for the use of the questions in teaching accompanies the exposition of the interests.

2. The relative value of different subject divisions is also given. For example, it is shown that problems of mental health, or the hygiene of thinking, are most important to the body of students studied. Other subject divisions follow in this order: physical activity; the concept of health; nutrition; professional health service; prevention of disease; sex and reproduction; skin and hair; mouth, eye, and ear; elimination; circulation; respiration; tobacco and alcohol; rest and fatigue. Two of the tables in this connection give detailed data on subdivisions of each of the above general topics; and one table shows a compari-

* By Delbert Oberteuffer, Ph.D. Teachers College, Columbia University, Contributions to Education, No. 407

son of these student judgments and the space given the subjects by textbook writers and other authorities.

3. The results of the word test indicate that training in biological sciences does not, per se, insure an increase in understanding of scientific words. An important implication from this chapter on terminology is that the teacher of hygiene should constantly strive to use only those words which will make the problems of living more readily understood, and that vocabulary, taught merely for the sake of the mastery of difficult words, probably cannot be justified.

4. Although not appearing as a stated result from the data presented, it is implied that teachers of health education can take the material presented in the form of questions and, adding them to other "data from adult life" make a better course of study for personal hygiene than if adult interests were relied upon entirely. The technique of studying the interests of the students through a collection and examination of their expressed questions is suggested as a means of making personal hygiene more vital to the large body of students. Personal hygiene, taught merely as an academic subject, without reference to the way students learn, or to the interests which students have in healthful living, has not proven successful. This reëxamination of content, and the inclusion of student interests as a part of the course, are suggested as remedies.

Other implications and results appear at the end of each chapter and in the summary.

DAY SCHOOLS VS. INSTITUTIONS FOR THE DEAF *

DURING 1924 and 1925 an extensive survey of Day Schools [1] and Institutions [2] for the Deaf was conducted by agents of the National Research Council. This survey included over 4,000 pupils who were twelve years of age or older. Forty-two schools cooperated. The majority of the states of the Union were represented.

The published results of this survey [3] showed a remarkable difference between the Day Schools and the Institutions, in educational achievement, as measured by the Pintner Educational Survey Test. The Day Schools were apparently very much more efficient in teaching the pupils who attended their schools. The Day Schools, however, had a superior group of pupils to teach. In general they were superior in mental ability, they had a higher degree of residual hearing and they had become deaf later in life. The National Research Council granted the author permission to use its data to make a detailed study of the influence of these and certain other factors on educational achievement.

PROCEDURE

It has been generally accepted that chronological age and mental ability exert considerable influence on the educational achievement of pupils.

A group of pupils from the Day

* By C. C. Upshall, Ph.D. Teachers College, Columbia University, Contributions to Education, No. 389.

[1] A Day School is one in which the pupils are in attendance only part of the day as in the typical public school.

[2] An Institution is a school in which the pupils live under the direction of the instructors during the whole twenty-four hours of the day.

[3] Day, Herbert E., Fusfeld, Irving S., and Pintner, R. "A Survey of American Schools for the Deaf, 1924-1925." National Research Council, Washington, 1928.

Schools was matched with a group from the Institutions, for mental age and chronological age. To gain as great equality as possible between Day School and Institutional children in respect to educational achievement, a group from one was equated with a group from the other for mental age, chronological age, age of becoming deaf, and years spent in schools for normal hearing children. The usual method of probabilities was used to determine the significance of the differences between the two types of schools in educational achievement.

Finally, the interrelations of the variables were determined by correlational techniques.

SOME CONCLUSIONS

1. When groups are compared which are equal in, first, average mental ability and chronological age, and, second, variability as measured by sigma, there is statistical certainty that the Day School group has accomplished more on the educational test than the Institutional group has.

2. When groups are compared which are equal in average mental ability, chronological age, age at which deafness occurred, years of attendance in schools for normal hearing pupils and degree of residual hearing, there are 99 chances in 100 that the Day School group has achieved better results than the Institutional group in educational achievement. The difference, however, is only 48½ per cent as great as when the groups are equated for mental ability and chronological age only.

It seems evident that the Day Schools are, in general, training their pupils more efficiently than the Institutions are, but that the real difference between the two kinds of schools is not nearly so great as the obtained differences would indicate. The two kinds of schools attract pupils that are different in many respects.

3. The interrelations between the variables studied are frequently curvilinear. The etas range from practically zero to .85 ± .01 between mental ability and educational achievement (N=1159).

The results of this analysis indicate the necessity of conducting a study of the quality of teaching in Day Schools as compared with that in Institutions for the Deaf, since this factor is the most probable cause of the difference in educational accomplishment.

PROBLEMS OF THE CITY SCHOOL SUPERINTENDENT IN THE FIELD OF ARITHMETIC *

THE author sought to determine what administrative and supervisory problems there are in the field of arithmetic which require specific knowledge on the part of the city superintendent of schools, and to provide a guide to the superintendent's reading in that field.

PROCEDURE

The literature in the field of arithmetic was studied with a view to determining the problems that were engaging the attention of investigators. The outgrowth of this study was a list of 106 problems that concern the work of the schools in arithmetic.

A personal visit was made to 54 city superintendents located in fifteen states. The cities range in size from 3,000 to 150,000. The superintendents were

* By Clarence Arthur Rubado, Ph.D. Teachers College, Columbia University, Contributions to Education, No. 406.

asked to name the problems they had actually had to consider in connection with their work. This called forth a list of 96 problems which were translated into the language of the 106 problems from the literature in the field.

Then the superintendents ranked the problems in one of three categories: essential, useful, of no value.

The problems were ranked in three ways:

1. According to the frequency of their occurrence in the list of problems suggested by the superintendents.

2. According to number of superintendents who judged them essential.

3. According to number of superintendents who judged them of no value.

The sum of the three rankings formed the basis for the final ranking. The 106 problems were then listed according to their importance in the work of the superintendent. The 27 problems of most importance are:

1. Textbooks and practice exercises (general).

2. Time allotment for arithmetic.

3. Objectives to be attained by a course in arithmetic.

4. Types of problems.

5. Tests and measures (general).

6. Provision in the curriculum for individual differences.

7. Time for beginning formal instruction.

8. Amount of practice on combinations and processes.

9. How to utilize a test.

10. Practice material organized on the basis of difficulty.

11. Diagnosis of pupils' difficulties.

12. Vocabulary of text suited to the ability of the pupil.

13. Grade placement of topics.

14. What to include in the curriculum.

15. Content of text compared to course of study.

16. How to remedy pupils' weaknesses.

17. Method of revision—How to organize a program of revision.

18. Method of presentation by the text.

19. Differentiated subject matter for different ability groups.

20. Use of tests for diagnostic purposes.

21. Pupils' methods of doing their work.

22. Methods of teaching fundamentals.

23. Methods of teaching problem solving.

24. Methods of teaching fractions.

25. Methods of teaching (general).

26. Percentage of failure.

27. Subject matter of text suited to ability of pupils.

Each of the problems was taken in order and its significance to the superintendent pointed out. Suggestions were given as to the references to be read on each problem.

An extensive bibliography was prepared and classified under each of the problems considered.

It is hoped that the work will be of special value to the superintendent in bringing him to a consciousness of the necessity for information on the school subjects, and in directing his reading in the field of arithmetic. It may be of value to schools which train superintendents, in that it points out a need for special training in the school subjects. It does provide an extensive bibliography for use in connection with the work in arithmetic.

TEACHERS COLLEGE *in the* NEWS

COMPILED BY CLYDE R. MILLER
DIRECTOR, BUREAU OF EDUCATIONAL SERVICE

Sir Michael Sadler

"The most distinguished educational event of the week," according to the *New York Times*, March 30, "has been the series of lectures at Teachers College by Sir Michael Sadler, Master of University College, Oxford." Sir Michael, who spoke under the auspices of Teachers College and of The Julius and Rosa Sachs Foundation, gave three addresses to audiences that filled the Horace Mann auditorium. These will be published in full in later issues of the *Record*. Meanwhile many of the points made by Sir Michael have been the subject of editorial comment. The *Times*, in the editorial mentioned above, went on to say:

His general theme was "The Outlook in Secondary Education." The mounting of the secondary school population in America during the last half century is without doubt the most notable movement in educational history since the days when the multitudes followed Abelard out into the fields. Sir Michael estimates America's influence to have been the most powerful in the building of the new citadels of culture. He does not hold this to be the sole factor, nor does he contend that the change would not have happened without American influence. But it would have come more slowly, for more than any other country the United States "has given drive and momentum to the new trend of educational thought and administration."

This is praise from the highest of authorities, for in educational matters Sir Michael is Sir Hubert; and it encourages America to carry that leadership into the higher realm in which liberal education has for the whole people what it had for the few in Aristotle's time. In his day free citizens alone were liberally educated, and for public, not private, ends. They stood apart from the mechanic "whose training was for servitude, not necessarily an unhappy servitude." But a liberal education is no longer a "royal enclosure," entered only by a privileged minority, served by "the illiberally trained." The ghost of the earlier exclusiveness still haunts English education, but it is frustrate here in America, where the doors of a liberal education are open to the multitude and where half the youth of eligible age have entered to make trial of their wills and wits.

Sir Michael quotes Milton's definition of a liberal education as the "most famous" and Matthew Arnold's as the "most far reaching of the moderns," but his own, composed when he was president of the Calcutta University Commission, deserves to be cited as the crowning contribution of his lectures:

> A liberal education should be given under conditions favorable to health. The body should be developed and trained by systematic and vigorous exercise. The eyes should be trained to see, the ears to hear, with quick and sure discrimination. The sense of beauty should be awakened. The hands should be trained to skillful use. The will should be kindled by an ideal and hardened by a discipline enjoining self-control. The pupil should learn to express himself accurately and simply in his mother tongue. Through mathematics he should learn the relations of forms and of numbers. Through history and literature he should learn something of the rec-

ords of the past; what the human race (and not least his fellow-countrymen) have achieved; and how the great poets and sages have interpreted the experience of life. His education should further demand from him some study of nature and should set him in the way of realizing both the amount and the quality of evidence which a valid induction requires. Besides this it should open windows in his mind, so that he may see wide perspectives of history and of human thought. It should also, by the enforcement of accuracy and steady work, teach him by what toil and patience men have to make their way along the road to truth. Above all, a liberal education should endeavor to give, by such methods and influences as it is free to use, a sure hold upon the principles of right and wrong. It should arouse and enlighten the conscience, the intellectual conscience and the moral. It should give experience in bearing responsibility, in organization, and in working with others for public ends, whether in leadership or in submission to the common will.

This is a gospel of preparation for livelihood and for leisure alike, directed to a man's use in the world but not altogether "this-worldly."

Professor Counts Sees Courage and Vigor in Russia's Planning Program

Among the relatively small number of United States citizens competent to discuss present-day Russia authoritatively are several members of the Teachers College faculty. Dr. George S. Counts, associate director of the International Institute, returned in January from a visit of nearly a year in Russia. In last month's *Record*, news articles containing his point of view were quoted. Since then others have appeared. The following, from the *Syracuse* (N. Y.) *Journal* was printed under a New York date line:

New York, March 25.—Too much attention is being paid in the United States to Russian Communism and religious persecution and not enough to the system of national development that has been adopted by the Soviet government, according to Dr. George S. Counts, director of the International Institute of Teachers College, Columbia University.

Dr. Counts has just returned from an extended tour of Russia in which he traveled alone from Leningrad to Moscow, and then made a tour of Southern Russia, going as far as Odessa.

"There are certain institutions and relationships in the revolutionary order of Soviet Russia which have received altogether too little attention in the American press," Dr. Counts said. "We have heard much about the Communist party, the Soviets, the labor unions, the Pioneers, the Society of Atheism and the persecution of the churches. On the other hand, we have heard little about the system of planning organs and its relation to public education."

The planning organs of Soviet Russia were described by Dr. Counts as a vast system which reaches from Moscow to the most remote corners of the Soviet Union, controlled by a central commission, the "All-Union Planning Commission," with offices in Moscow. It is the work of these organs to co-operate with each other and the central government in the development of Russia along economic, social and cultural lines.

Step by step, the system divides into smaller groups, each with a certain territory to handle. One of the things that the Bolsheviki have grown away from, Dr. Counts said, was the centralization of all industry and farming around Moscow.

"With great courage and vigor," Dr. Counts says, "Soviet economists have entered a field of endeavor which is practically closed to economists in capitalistic countries. Already bibliographies are appearing which include hundreds of titles."

The organized planning is closely related to the educational system, which Dr. Counts believes to be wider in scope than any educational system in the world. It embraces not only schools, but the press, the motion pictures, the radio, the library, reading rooms, the bookstore, clubs, young people's organizations, museums, art galleries and even the army.

It is divided into two systems, one of which is designed for the coming generations, while the other seeks to educate the adults.

A unique development of the relationship between the educational system and the planning organs, Dr. Counts said, is the five-year plan, which was launched in October, 1928. It provides for the industrialization of the country and the socialistic reconstruction of the village.

Dr. Counts said that he had been warned, before going to Russia, that the plans announced were merely on "paper" and were intended to fool other nations. He said that he, himself, however, saw a great part of the development in progress.

The biggest job in the cultural program, Dr. Counts believes, will be the wiping out of illiteracy, which they expect to accomplish throughout the republic in five years. They also plan to universalize primary education and to increase the number of cottage reading rooms from 22,000 to 38,000. They seek to increase the number of moving picture stations four fold.

The Soviets regard the job of training an enormous number of specialists as a part of their cultural development program and as one of their most fundamental and crucial tasks. Up until now they have had to depend largely on foreign technicians.

Unique methods are employed by the newspapers to keep at fever heat the interest in government projects. They constantly employ such phrases as "the war for specialists," "the preparation of millions of warriors for collectivization," and "on the front of construction," Dr. Counts reports.

Such methods are made necessary by the inability of the Soviet government to obtain loans from other countries. In this circumstance the only recourse is to call upon the Russian populace to sacrifice luxuries and often some of the necessities of life. It is necessary to maintain this willingness to live in the future month after month and year after year.

Russia's Educational Program Consistent and Effective

Teachers College professors who have studied conditions in Russia continue to be in demand as speakers. Dr. W. H. Kilpatrick recently spoke before the Rochester (N. Y.) Teachers Association. The *Democrat and Chronicle* of that city gave prominent display to the report of his address:

"The school system of Russia is an immense propaganda affair," asserted Dr. William H. Kilpatrick.

"These schools are run with the intention of turning out thorough-going Communists."

Dr. Kilpatrick described conditions as he saw them in Moscow recently, which he believed to be typical of all Russia. He said that he found an intensity of interest and sincerity of belief in what is being done among all classes of the Russian people such as he has witnessed in no other country in the world, and he has made two world tours in the past four years.

Much of the information that children in the Russian schools get about the world is biased and distorted, and consciously and consistently so, he said. The Scopes trial in Tennessee is held up as a typical American historical incident, and the children of Russia are taught to believe that the Young Pioneers, a Communist organization of young people, is a great rival of the Boy Scouts.

Dr. Kilpatrick had the services of the secretary while he was in Russia, a young American citizen, who was his interpreter, and he believes that he got a fairly accurate impression of what is going on.

"As I look at it," he said, "Russia is drab, and there is very little wealth there. Through a devastating war, a complete upturn of society, and a devastating revolution, the country got rid of most of the people who formerly had been important. The money now made in Russia is very well apportioned. There are very few beggars. The peo-

ple generally dress drably, rather meanly; I saw few men wearing white collars, and the women wear no colors.

"They have a seriousness of demeanor that has the character of deep earnestness. If ever one saw a people dead in earnest, I saw them in Moscow. I came away convinced that those in authority are as deeply in earnest, honest, and entirely sincere as any group of missionaries that I ever met. I believe there is as little profiting from the positions they hold as by any government officials anywhere in the world.

"The young people are enthusiastic, and reminded me of our own young people during the war, when they felt that they must get behind and see the thing through. There probably are middle-aged people who feel that they are giving up too much for the future, but it is not healthy for anyone to give expression to such thoughts.

"Moscow is teeming with life and enthusiasm; and the people, and especially the working people, are encouraged to visit there for the inspiration it will give them."

Dr. Kilpatrick described the five-year plan of development of all resources of Russia that has been laid out, in which the schools play a large part. The fundamental subjects taught, he said, are only incidental to the program of propaganda which is put in the form of projects offered through syllabuses provided by the authorities. Pupils and teacher take the subject they will work on, and supposedly work it out to suit themselves.

Teaching was divided under three heads—complex, socially useful, and pupil participation. The complex method is what Dr. Kilpatrick calls a modified compromise method. That is, the subject is taken from the syllabus provided by the authorities, and teacher and pupils work it out. It may have to do with agriculture, how to get a greater production per acre, or with water power, or manufacturing. In working this out, the pupil is expected to get his training in the ordinary subject that would be taught separately in an American school.

Then each class must give some of its time to that which is socially useful to the community. It may be the furthering of a bond issue, or the aiding of farmers to select seed, or test cattle.

Pupil participation is emphasized in Russia more than anywhere else in the world. Pupils bear a responsibility for the conduct of their schools about double that in an American school where pupil participation is highly developed.

Dr. Kilpatrick said that everything that goes on in the schools is designed consciously and consistently to help the social program of the Soviets. "I have seldom seen anywhere," he said, "children more alert, more self-directed, more easy; they talked right out, and without restriction."

In closing, Dr. Kilpatrick told about the anti-religious museum in Moscow, in which there is a definite design to show religion as the foe of progress and of mankind, by pictures and other forms of propaganda. To prove that the miracles of the preservations of the bodies of the saints were not true, and that such preservations have been owing to qualities in the soil, bodies of dignitaries of former ages and the bodies of chickens and animals which have lain long in the same soil have been removed to the museum and exposed to public view. Anti-religion is taught in the schools, but no religion may be taught to anyone under 18 years of age.

He found Russia prepared for war in a way that no other nation has been prepared in peace time, Dr. Kilpatrick said, and there is constant talk of a war that the Russians believe is close at hand, in which they will be on the defensive. That is their reason, or excuse, for being armed to the teeth. Children in the schools are taught of the coming conquest of the world by Communism.

Three results Dr. Kilpatrick believes are coming out of the Russian situation: All of the young people are wholeheartedly for the cause of Communism. They believe that the rest of the world in time will come to their way of thinking, and Russia and its stupendous program are fairly safe as regards the rising generation.

Dr. Kilpatrick believes that Russia in

its educational program is the most consistent country in the world; and that if America is to meet its problem of increasing unemployment, it must develop an equally consistent program for training its own young.

Your Speech Betrays You

Sally MacDougall, writing in the Sunday Magazine of the *New York World* (March 30) quotes liberally from Jane Dorsey, speech instructor at Teachers College:

It is now becoming possible through the results of speech research in colleges to judge people by their voices. If you listen intelligently to your own speech and that of other people you have a running start in contacts with those you meet. Your voice tells what sort of person you are. If it is metallic and strident you are pretty sure to be high strung and irritable. If you speak your sentences with a falling inflection you should be a person of decision and deep conviction. If you speak with a rising inflection you are probably deferential, uncertain, doubtful. If you come into the conversation with aggressive blasts of sound you are lacking in courage and self-confidence. If your voice is weak and somewhat nasal it doubtless expresses a dull state of mind and body and will.

This is not harum-scarum guessing. Laymen long have been judging each other on the basis of speech. Now the scientists are seeing what they can do in the way of listing personality traits from voice impressions. Miss Jane Dorsey, speech instructor at Teachers College, Columbia University, insists that since the voice looms so large as an instrument for determining personality and that since by changing voice habits we can get at the heart of things and change our characters, the first thing to do is to form the habit of hearing ourselves talk. She demonstrates her ideas by turning on one record after another in Dr. W. Cabell Greet's dictaphone device, on which records have been made by Professors Greet and Harry M. Ayres in their research into dialects spoken by Columbia students. By means of these records some of the hundred graduates who are studying speech can hear themselves as others hear them besides hearing all sorts of guesses as to what kind of personality goes with a particular quality of voice.

In a pile of records beside the dictaphone is a collection of rather terrible voices from Maine and Missouri and almost every other State in the Union contributed anonymously, mostly by teachers, for whatever good they can do for science and as examples of something to be avoided in the program for promoting better speech standards. After hearing these the members of the class are free to change voice and character to fit the pattern of some ideal. Instructors have unlimited encouragement for those who aspire to make themselves over even when they have to begin by toning down the most rasping reaches of raucous voices and digging down to the inmost recesses of timid souls.

"I recommend any course that would help a person to a better impression of personality," Miss Dorsey said. "I don't think people can do that without changing inside. Any habit can be changed. Most people wear masks anyway and we are trying to break through the mask to find the person that is there. Our own contacts would be easier if this mask that we put on would be one that in terms of voice would have grace, clarity, resonance, rich variety. If we would assume that mask we would take over the characteristics of that personality. If an honest, sincere person concentrates on changing a habit he is going to look at himself and see to it that the habit is changed. It is too bad to make personality judgments by means of the voice without doing something about it. Something can be done about it."

The question arose as to whether one might not be in danger of losing one's individuality and causing confusion to one's self and others by taking on new voice habits. But the speech teacher sees no danger there at all.

"Instead of losing his individuality he

would find it," she said. "He would gain by developing a good technique of speech. There is an element of satisfaction, particularly to people who feel inferior, if they are able to develop a technique to which they can refer. It helps toward an emotional adjustment. I think that the mask of speech, like the masks of personal appearance, posture, clothes, may be as little individual as anything can be. The thing to do is to have speech habits that will express the best of which we are capable. We know that to develop good habits of voice, speech, manner, lets the mind shine through and, knowing this, we cannot be content with anything less than the finest speech. It is by nature so closely tied up with every other thing we do that it is possible to connect it with everything in a new scheme of habits. While for a time attention may be called to the new technique, still we need not stay in that state very long. A new style of clothes may seem strange at first. After a while it belongs to a person. The clothes will soon fit very nicely and be an adequate expression of what clothes should express."

Fear and shyness are two characteristics whose elimination may be a by-product of cultivating good speech habits. One of the first things to remember is that every voice has its natural pitch, determined by the length and thickness of the vocal cords, and that speaking in this key insures the best tone of which the voice is capable. A good way to find that pitch is to try it over with a piano. One of the things Miss Dorsey is trying to do is to get students to carry the singing method over into speech, to give the tone the same support in speech that it gets in song, thus avoiding monotony and insuring flexibility. Speech tunes are no less important than tunes of song. Subtlety depends so much upon method. And so revelatory of character and mood is the quality of voice that it often expresses thoughts and emotions more truly than words. We are referred to Shakespeare's recommendation to "speak trippingly on the tongue." We are told to think of the front of the mouth as the chief articulator and the throat and back of the mouth as a resonator.

Does all this sound arty? Not to the scientists and not to those students who take speech to tie it up with graduate study of business, politics, dramatics; nor to business heads who, through trade papers, are pleading for pleasing voices and better pronunciation in business. In a world where the keynote of life is not independence but interdependence, it is up to all of us to make as good an impression through speech as we can. This does not mean acquiring artificial elegance as a sort of veneer. Miss Dorsey compared that to putting on a grand evening gown over a bungalow apron.

"We do not want mincing and affected voices any more than we want those that speak in blasts of sound," she said. "Sensible persons prefer a voice of little charm except the ring of sincerity. Without those physical and mental characteristics of which a certain quality of voice is the natural expression, the voice will lack sincerity. Any extreme of speech is some kind of pose. It may be extreme high or low pitch, extreme fast or slow tempo. It indicates that one is badly adjusted socially or has been in the past and has failed to correct the old habit. I don't think many people are fooled by speech mannerisms, though people sometimes fool themselves. We all know men and women who voice their opinions with tremendous self-assurance to cover self-distrust, and we know that the too aggressive man is more often than not lacking in courage, that he is whistling to keep his courage up. If only he would whistle tunefully.

"People do not hear themselves. That is the drawback. If they could hear those awful noises they make they would do something about it, particularly if they are genuinely thoughtful persons. They would think of how they affect other people unpleasantly.

Adjectives fly thick and fast among Miss Dorsey's students when they are looking for words to define certain kinds of voices that are tried on the dictaphone. These described the "social attitude" of one voice: "strained, tense, aggressive, assertive, defensive, inferior, excitable, ir-

ritable, pessimistic, self-conscious, timid, frightened, anxious, hesitant, superficial."

In this connection it was hazarded that Miss Dorsey must have been born at Oxford and had at least an uncle who was a don.

"Oh, dear, no! I'm from Missouri," Miss Dorsey said.

In Panama, as told in the *New York Times* of March 19:

A commission of twenty-eight educators from the Institute of Educational Research of Teachers College, Columbia University, sailed on the *SS Ancon* yesterday for Cristobal to make a three-weeks' study of the schools in the Canal Zone. Dr. N. L. Engelhardt heads the commission, which will present a detailed report to the War Department, with recommendations for a proposed reorganization of the schools there.

Teachers College was retained to conduct the survey, following a request to Congress by representatives of the Canal Zone asking for an investigation. Every phase of the school organization is to be examined, including buildings, teacher personnel, the system of school finance, the curriculum, the achievements of pupils and business administration.

Dr. Engelhardt's special field will be the general administrative efficiency, while four other specialists will make studies in their own fields, assisted by graduate students in school administration at Columbia. They are: Dr. Carter Alexander, finance; Dr. Willard Elsbree, teacher personnel, curriculum and pupil testing; Dr. Guy Hilleboe, classification of pupils; Ray Hamon, formerly director of public school buildings at Miami, Fla., buildings.

The school children in the Canal Zone are to be tested to find how they rank in comparison with children enrolled in the most modern schools in this country. Their reactions to the proposed revision of the curriculum will also be determined. Health and physical education will be stressed.

Those assisting Dr. Engelhardt and his associates are: Dr. Henry Curtis, Requa Bell, Henry Alves, Fred Beach, Calvin Dengler, Ingolf Friswold, M. W. Longman, Victor Nicklas, Grant Rahn, Charles F. Reid, James H. Smith, J. Flint Waller, Harley Wooden, Horace Wysong.

The following interesting item appeared in the *New York Times* of April 8:

American children, many of whom were born here [in Balboa] attending Canal Zone schools are far ahead of the average group in the United States, according to Dr. N. L. Engelhardt, who is making a survey of the school system with twenty-seven expert educators from Teachers College, Columbia University.

Final checking of the papers written by the students in an "achievement test" places them at from a half to a full year ahead of their contemporaries in the temperate climate at home. Tests in reading from the second to the seventh grades showed the average a half grade above the average of children in the United States and the seventh grade rates a full year above standard.

Spelling and arithmetic tests showed Canal Zone children a half year ahead of pupils of the same grades and ages in the United States. High school students also averaged higher than in the United States and in social studies the twelfth grade made an average score of 42, as compared with 32 for the average pupil in the United States.

One high school student made a score in English which ranked in the upper 5 per cent of all students ever taking the test in the United States and another reached the upper 5 per cent in mathematics.

Students in the schools are largely children of civilian employes of the canal and members of the army and navy stationed here.

More Surveys

At Utica, as announced by the Utica (N. Y.) *Observer-Dispatch* of March 28:

Utica is to have a survey of its public school system which is to be com-

pleted within three months and cost not more than $5,000. It is hoped to complete the survey and list results by June 30.

The work is to be under the direction of Dr. George D. Strayer of Columbia University, who has supervised more than 70 school surveys, and will, it is expected, give the Board of Education valuable suggestions as to what should be done in the way of construction or changes in buildings and equipment for the improvement of the school system.

Decision to have the survey was reached at a meeting of the Board of Education yesterday afternoon after hearing the report of Superintendent of Schools John A. DeCamp and Secretary E. O. Folsom, who last week talked with Dr. Strayer and officers of the State Education Department on the subject.

It was stated that the State Education Department was unable to make a survey in Utica because of the lack of qualified persons who could devote the necessary time to the work.

Mr. DeCamp said he had written to many cities where Dr. Strayer had made surveys and that all agreed the task had been well done. The survey was suggested by communications from the New Century Club and the League of Women Voters to the Board of Education on March 18. In discussing how best to provide additional high school facilities, the women's organization suggested the board summon an education expert to look over the entire problem and advise as to the best solution.

Mr. DeCamp said Dr. Strayer at once will send a corps of field workers to investigate local school conditions and will submit recommendations by June 30.

Defects in Hearing Handicap Many Pupils

Plans of Dr. H. G. Rowell, professor of health education at Teachers College, to coöperate in bringing aid to children who are hard of hearing were described recently in the *New York Times*:

Working in coöperation with the New York League for the Hard of Hearing, Dr. Rowell will urge upon public education heads the need for special lip reading classes and trained teachers for children with defective hearing. Recent surveys at Teachers College indicate that from 5 to 10 per cent of all city school children are afflicted, and Dr. Rowell believes comprehensive tests will show the number to be much greater.

A selected group of public school children is now receiving instruction in lip reading in an experimental class at the Horace Mann School of Teachers College. Dr. Rowell plans to form classes for teachers and school nurses as well, where they may improve their diction and learn how to handle children with ear troubles.

The hearing tests now in use, he says, are inaccurate and antiquated. Frequently the child who spends a good part of his time in the corner for inattention or stupidity is the victim of unscientific examinations which show his hearing to be perfect when it is really slightly defective, he believes.

"The children in our experimental class are only a few who have been selected from a large number in need of such instruction," he asserted. "Their hearing is not bad enough to warrant their being sent to an institution, but there is at present no provision in the public school system for them. With a little training they can be salvaged from the mediocrity to which their ear difficulties condemn them.

"Our plan is to teach lip reading to such children and to have regular classes so that children showing the first symptoms of deafness may be able to apply this method to their class work immediately. Then, if their hearing gets worse, they are insured. The boy who consistently wears the dunce cap as a penalty for not grasping his lessons often shows an intelligence above the average.

"Too many public school teachers are guilty of careless diction. They should be warned to pick out children with ear difficulties and get them up in the front seats as unobtrusively as possible. They must learn not to cover up their mouths,

as so many of them do. Many teachers often make it embarrassing for a defective child by drawing attention and ridicule to him. It is criminal to be so ignorant of child psychology."

Dr. Rowell also criticized school administrators for their unwillingness to provide money for expensive instruments. Audiometers, costing about $500 each, should be installed throughout the school system and the present instruments and tests should be discarded, he said.

Institutional Segregation Gives Way to Community Control

Professor Leta S. Hollingworth talked about mentally defective children before special class teachers in a meeting at Boston. Part of what she said, as it appeared in the *Boston Evening Globe* follows:

"Experiments indicate the beginning of a time when the aimless and fruitless drifting of the mentally deficient boy or girl from one unsuitable job to another will be tolerated no longer. The colossal problems of unemployment, delinquency, dependency, and a host of others, originate in part at least, in the blind occupational drifting of persons incompetent to appraise their own powers, turned out of school untrained for any work they can do, trying first one job, and then another in the futile hope of catching on somewhere.

"Some of them find occupations, and many, many others find instead, dependence, delinquency and unemployment. The problem is one of scientific recognition of the mentally defective child, the training of him or her for simple work of a kind not likely soon to become passé, and the official supervision of the individual in relation to his work."

The speaker said that society is becoming troubled by these problems and that, sooner or later, science will be called upon to help solve them. With 20,000 different occupations classified in the 1920 census, "how can the mentally defective find their capabilities?" she asked. Defectives, disregarding their limitations, are known to want to do the same work that normal children want to do, she pointed out.

The speaker tried to right a mistaken notion in the minds of some people. "What is unskilled labor for the normal person is highly skilled labor for the defective, and he must be especially trained for it," she said. She stated that a number of special classes for mentally deficient children are graduated without the necessary social adjustments being made. "Nearly all are capable of doing some useful work. They are not a lot of wastage," she declared.

By way of illustration, she prophesied that if all the workers in Boston beneath a certain mental age, were suddenly spirited away, a great clamor would be put up by their employers. It wouldn't be possible to fill their jobs, and many factories and shops would be crippled. The really difficult problem, she believed to be the problem of competent supervision over the mentally deficient. The whole tendency of social work is away from institutional segregation to local community control, she said.

For Fast, Easy Reading

Public education makes millions literate and so prepares them to become readers of newspapers and magazines. It is not strange, therefore, that many editors were interested in the *Teachers College Record* article (March, 1930) in which Professor Goodwin Watson, of Teachers College, and Professor Theodore Newcomb, of Lehigh University, told of experiments in promoting speedier reading. This editorial is from that newspaper of the masses, the New York *Daily News*:

How do you read?—if we may be so nosy as to inquire into one of your personal habits.

Everybody reads nowadays, in this

country, except the five million or so American adults who can't read. The public schools should eventually cut the illiteracy rate to zero. The fact that the western world is a world of newspaper, magazine and book readers is one thing that makes it different from any civilization we know to have existed in past time on the earth, and probably more durable.

But, to get back to the first question and enlarge it a bit, what is the best way to read? Should one try to cover all the reading matter that comes before the eyes every day? Should you concentrate on every word for fear some valuable idea will get away? Should you try to spot the central idea in every paragraph you read and let the rest slide? Or how should you read to get the most out of whatever you read?

The best advice on the subject that we've seen was recently boiled down by two psychologists from a set of experiments they conducted at Teachers College, Columbia University. They were Professors Goodwin Watson and Theodore Newcomb. These gentlemen stated five rules for reading, which, with grateful acknowledgments to them, we condense and pass along:

(1) Don't whisper the words as you read, or form them with your lips or tongue. Don't point them out to yourself. All this slows up your reading.

(2) You do not have to strain your eyes, mind or muscles in order to read fast. Relax; let the print flow into your mind through your eyes, instead of feverishly chasing the words with your mind.

(3) Try to see phrases, sentences and even whole paragraphs at a glance, and grab their central meaning with one clutch of the mind's fingers. Don't stop on particular words (but, if we may add a bit of advice to the psychologists', take the trouble to look up in a dictionary any word you don't understand). Make the eye movement a steadily forward one.

(4) If you find your mind wandering as you read, don't become impatient, don't further scatter your thoughts by fighting for concentration. It is some other problem which has called your attention away from your reading. Don't fight it; simply make a mental or a written note to take up that problem when you get around to it. Watson and Newcomb found that a written memo will often push the intruding idea out of the mind until the reading session is finished.

(5) The most important rule, according to Watson and Newcomb, is to try to think out in advance what the author is going to say. Don't simply blot up his ideas. Keep your curiosity alive, and so keep up your interest in what you are reading, by asking yourself whether the author is developing his idea as you would expect him to develop it, or as you would develop it if you were doing the writing.

"It is seldom necessary," say these psychologists, "to read every word of every sentence."

Two hundred graduate students at Teachers College applied these rules in a series of six ten-minute reading sessions. They increased their average reading speed from 250 words a minute to 319. That does not matter so much as does the fact that they learned how to read without waste of time or mental or bodily energy.

Stubbornness

From the *New York Times* comes this item:

Stubbornness in small children reaches its peak at the age of 2 and is caused by the child's inability to say anything but "No!" and by its unconscious struggles to become a personality, according to Dr. Martha May Reynolds, whose experiments were made public at Teachers College, Columbia University.

Observing negativism from all angles, as expressed by the 229 children between 2 and 6 who figured in her experiments, Dr. Reynolds was unable to formulate a cure to aid harassed parents. The best plan, she concluded, is not to provoke youngsters into making a scene.

After the child passes its second birthday, she found, its normal tendency is to lose its contrariness by slow degrees. By the time it reaches the age of 4 it has learned the polite social forms for

denying a request and should not give its parents any more trouble. If it continues to be negativistic it is simply not normal, Dr. Reynolds said, and requires expert treatment.

Dr. Reynolds assigned as one of the most significant causes of stubbornness the child's "lack of adequate language expressions." Sympathetic understanding and a genuine respect for the child's personality are the parent's most effective weapons, she believes. Persisting in ordering the child to do something it does not desire to do will only aggravate it further, she found.

"About the only tool which the 2-year-old has at its command to express its unwillingness to do as we wish it to is 'no,'" Dr. Reynolds explained. "The 4-year-old uses 'Yes, I will in just a minute,' 'Wait till I get through doing this,' and other politer forms, just as adults do.

"Ordinary use of 'not' and 'can't' is not thoroughly at the command of some of these smaller children. Requests of adults to pre-school children should be couched in the form of 'Let's do this, shall we?' implying a willingness to meet him at least half-way. Don't persist. Give the child a chance to capitulate and still save his self-respect."

How Many Girls Want to Teach?

Marguerite Mooers Marshall asked the above question in the *New York Evening World* following news stories about Professor Kitson's "million dollar test":

To the army of women now engaged in the profession of teaching, a big new detachment of recruits will be added in another two months, when the colleges and training schools turn out the Class of 1930. On the heels of this realization comes the announcement just made by Dr. Harry Dexter Kitson, psychologist at Teachers College, that, in his survey to find out whether workers are satisfied with their jobs, only nineteen per cent of teachers report maximum interest in their work. Such a finding raises anew the question of how many girls really want to teach—and how many girls would be better off doing something else—to say nothing of their young charges!

To be sure, Dr. Kitson's test of maximum interest in work is drastic. "Would you," he inquires, in effect, "do your job if you had $1,000,000 and were not obliged to work?" Well, on first impulse, would any of us, suddenly endowed with a million, do any job at all—teaching, plumbing, cooking, typing, columning? Has anybody a maximum interest in his work equal to his maximum interest in no work at all?

Nevertheless, among the persons examined by Dr. Kitson, a percentage system of measuring comparative interest in jobs shows that nearly twice as many trained nurses as teachers feel maximum interest in their work. And this result reminds many a woman of the wail she has heard from many a college girl, "Oh, I suppose I'll teach—there's nothing else!"

Isn't it about time that the girl who doesn't want to be a teacher should stop planning or trying to be one? If all this talk about new opportunities for women means anything, shouldn't it mean that they need no longer teach for a living, if they have neither maximum nor even minimum interest in the job?

As the President of Hunter College recently reminded us, when that college was founded a nice girl could marry, she could teach, she could sell things in a shop—that was all. Our own mother and her friends automatically gravitated from their New England academies and seminaries to the schoolma'am's desk—until the schoolma'am married.

Even when we were in college, most of the girls we knew became teachers as a matter of course. We did, ourself, until we had the first term's examination papers to correct; over which we vowed "Never again!" Teaching is an entirely worth-while profession, but it demands a combination of egotism and humility which we have never possessed. We cannot pose as a pillar of dignity and discipline. On the other hand, we want to do things for ourself, not to show others how to do things.

It seems to us that the teacher with-

out interest in her work creates unhappiness not only for herself but for her pupils. She is handling the most delicate and malleable and impressionable of human material. If, in her heart, she is bored or bitter, how can those in her classroom take any real interest in what they do under her leadership?

West Berlin Comes to Lincoln

The correspondent of the *Berlin* (N. J.) *Breeze* obviously was a member of a group of teachers who came up to New York to see Lincoln School:

It was the privilege of several teachers of the West Berlin school to visit the Lincoln school, New York. This school operates in conjunction with the Teachers College of Columbia University. It has a nation-wide reputation as a child center school. There the theory of pupil development has been successfully put into practice, since the curriculum is made to fit the development of the child, and there is no mad struggle on the part of either teacher or child to take individual children and regardless of their abilities, attempt to make all conform to the same educational standards.

It was interesting to note in the visitors' book the names of teachers and educational supervisors from all over the United States.

There are certain visiting hours, and during the allotted time a visit to the eighth grade music class was made.

The room was fitted with a piano, a victrola, a machine for visual education and lockers for musical instruments and books. There was a teacher who played the piano, while the other teacher did the music work. Emphasis was placed on the same aims which Miss McKinley, our county helping teacher, has so ably planned and stressed for our music work.

We enjoyed a two-part singing lesson, stressing the high sweet tones, a listening lesson for appreciation and a current event discussion on opera which was the particular music issue in which this class was interested. The period ended with singing for pure enjoyment and appreciation.

Later on, it was possible to visit the eighth grade history class, and it was a delightful surprise to find history being taught by the use of the problem method, supplemented by notebooks and clippings. The class was using the discussion type of recitation and the problem they were interested in was the War of 1812. The discussion centered on the Milan Decree, Orders in Council, and the Berlin Decree. Correlated with this blockade question, was the English blockade in the World War, also the possibility of the use of the blockade between Canada and the United States in comparison with the reciprocity which now exists in time of peace.

There were many interesting displays of individual pupils' work, especially on China, India, Egypt and ancient civilization. It was interesting to note that Lincoln School makes use of visual education through the use of movies.

It was encouraging to realize that in our school we have been training for pupil activity along the same progressive lines and in many instances are using identical methods of developing pupil growth.

Lincoln Youngsters Present Symphony

Creative music is one of the things for which Lincoln School of Teachers College is known. Every year the children, under the leadership of Mrs. Satis N. Coleman, write and play a symphony. This year's achievement is described in the *New York Times* (March 20):

Parents with harassed memories of epic struggles over point and counterpoint—bitterly waged in little red schoolhouses throughout the country—went yesterday morning to a large red schoolhouse on West 123d Street to hear their children give a symphony concert which they had written and produced themselves.

It was the first public performance of

the Lincoln School's annual Spring concert season, a short season which closes after the performance tomorrow. The name of this year's offering is Symphony No. 3 in F major, and to make it a finished product all the members of the fourth, fifth and sixth grades have worked for many weeks. Artists were among them, and composers, and the drums hinted that, above all, there were carpenters between the ages of 8 and 12.

The first showing was well attended. Parents and friends filled the balcony section and looked down with some surprise on marimba players they had known before as merely their children. Teachers at the school, with some cynics from the third grade, made up the audience in the auditorium. Such persons as Rube Goldberg and Ernest Schelling were present, the former with a proprietary interest in some of the violinists and the latter because he gives concerts himself. It was Mr. Schelling who at the end called down and asked the orchestra to repeat the second movement.

The large room was well filled when the orchestra, in starched dresses and combed hair, filed in. They carried their instruments, some of them two or three, for in the Lincoln School it is customary for a psaltery player to double in marimba and perhaps triple in bells. They found their places on the stage, the drummers high at the back and the violinists, pianists and operators of psalteries at the front. Then there were speeches.

Elizabeth Wise explained that the orchestra was young, not by membership but in time. It had been together only a month in preparation, but the themes had been written and the instruments assembled as long ago as January. Gunther Close told the uses of the various instruments and pointed with pride to the fact that the fourth grade had made the drums.

Then came Robert Arnstein, with a discussion of the theory and formation of symphonies in general, and turned the platform over to Marion Sulzberger. She told what was aimed at in the first movement of Symphony No. 3 in F major and gave the names of those contributing the themes.

When the first movement had been played under the leadership of Mrs. Satis N. Coleman, who combined the themes into Master Arnstein's proper forms, Marjorie Lewisohn told the meaning of the second. She explained that it dealt with "the life of primitive man," the first part "being some shepherds with flutes," the second "when the violins sound a little like Africa" and finally when "primitive man discovers fire to keep him warm." There are drums in this second movement, and the drummers at the back of the stage entered into the spirit of the thing.

Preceding the third section Roger Schafer stepped out and informed the audience that it was about to hear a minuet, and before the fourth Gordon Hough said that it would be a rondo, "which comes around back to the theme on which it started." Then, at the end, when the children were filing from the stage, Mr. Schelling asked for a repetition, and the section "a little like Africa" and about "primitive man" was played over for him.

Of the various themes that were incorporated into the whole, those of the first movement were written by Gordon Hough, Arthur Cecil, Alan Stewart, Hugh Croly, Katrina Voorhees, Marjorie Graham, Antoine Gagne and John Buttrick. The second, Africa and all, came from Mary Alexander, Peter Chenery and Robin Davis. The third was written by Elaine Oberwager, Tom Horn, Gunther Close, Maro Ajemian, Carol Hirsch, Edmund Pollak, Katrina Voorhees and Brand Wehle.

The largest number of children participated in the formation of the fourth movement. They were Barbara Stroock, Roger Hall, Hilda Reis, Florence Dyer, Robert Arnstein, George Naumberg, June Rossbach, Charlotte Fehlman, Gifford Beal, Margaret Watters, George Schroeder, Ann Cohen, Frances Fohs, Marjorie Lewisohn, Tom Goldberg and Eleanor Gale.

Of the instruments the marimbas were made by the students in the sixth grade and the drums by those in the fourth.

A Tribute to the Modern School System

Criticisms of the modern school systems involving the effectiveness of the schools in the three R's were considered when Carleton H. Mann, now assistant superintendent of schools at Asheville, N. C., wrote his doctor's dissertation. This document published recently, evoked editorials. The following one is from the *Newport* (Va.) *Press*:

Perhaps there has been no more fruitful source of criticism of the modern school on the part of fond parents than the diversification of education which characterizes the modern educational system beyond the grade schools. In the minds of many a patron of the schools today those were blessed days about which a lyric writer has woven the song concerning "readin' an' writin' an' 'rithmetic, taught to the tune of a hickory stick."

That view, however, is largely fictional in the opinion of Dr. Carleton Hunter Mann, of Teachers College, Columbia University, a virtual citadel of knowledge of things scholastic, and one whose words seekers after statistical truth hail as gospel. Dr. Mann, with the somewhat elaborate facilities at his disposal, has studied time allotments in the schools of 444 cities in the United States and finds no languishing program of instilling the "three R's." Instead he finds that the current opinion that reading, writing and arithmetic have been crowded out of the curriculum by a wide variety of new subjects is "entirely erroneous."

He grants in his summary of modern conditions that the percentage of time given to these fundamentals has dropped from 91.7 per cent in 1826 to 51.7 per cent today, but on the other hand the actual number of hours of instruction in these branches of education has been greatly increased by the longer school year which prevails today and the increase in the average number of days of schooling under compulsory education systems and other modern requirements.

"From figures compiled in the course of the study," says Dr. Mann of his investigation, "it is apparent that today the children of the nation receive more than twice as many hours of instruction in reading, writing and arithmetic as they did in 1866 and almost four times that which they received in 1826."

Since no one would dare accuse the precocious youngster of today of having any less mental capacity than the children of a century ago the eminent Columbia educator has done the public and the schools a service by showing up the modern instruction in the "three R's" in the right light. He has made a point which would have been readily escaped in any superficial consideration of the question. His report is highly encouraging for education as a whole and a tribute to the modern school system, which has provided the individual not only with the fundamentals which were once nearly the sum total of instruction in the secondary schools, but with a set of diversified studies which must round out commendably a proficiency in the "three R's."

COLLEGE & ALUMNI NOTES

COLLEGE NOTES

EDUCATIONAL ADMINISTRATION

The survey group who are studying the school system in the Panama Canal Zone sailed on March 18 on the *SS. Ancon*. In the group were Professor and Mrs. Engelhardt, Misses Helen and Hildagarde Engelhardt, Professor and Mrs. Willard S. Elsbree, Professor Carter Alexander, Dr. Guy L. Hilleboe, and Mr. Ray L. Hamon. Eighteen men who are enrolled in the department of educational administration, Miss Evelyn Horton, statistician, and Misses Rae Sanders and Helen Thorp, secretaries, completed the party. The group spent eighteen days in the Zone, surveying conditions there. They returned to Teachers College the latter part of April.

On March 22 Professor Paul R. Mort addressed the Chicago Principals' Association on the topic, "State School Support and City Salaries."

Professors Strayer and Engelhardt entertained a group of superintendents of near-by school systems at dinner at the Faculty Club on March 11.

The final oral report of the Holyoke Survey was presented to the authorities and patrons of the Holyoke, Mass., public schools on Friday, March 14. Professors Strayer and Mort delivered the report before the citizens of the city. The manuscript of the survey will soon be ready for the printer.

On March 24 and 25 Professor Mort conducted a series of discussions on educational finance in Wyoming at the Third Annual Conference of Wyoming School Administrators, held at the University of Wyoming.

ADVISERS OF WOMEN

The Advisers Club held on March 11 an interesting meeting in Seth Low Hall. The entire evening was given over to good times of all kinds, and presented an excellent opportunity for the new second semester members of the Club to get acquainted. The Advisers Club was honored by having as its speaker at the meeting on March 24 Dr. Juliana Haskell, Adviser to Graduate Women at Columbia University. The group were given the opportunity of hearing parts of Dr. Haskell's address which was originally given at the meeting of the National Association of Deans of Women in Atlantic City in February.

Interesting news from the East comes through letters from Professor Sarah M. Sturtevant, absent this semester on sabbatical leave and traveling in the Orient.

Miss Sturtevant has spent several weeks in India and is now in China. She will return to Teachers College for the Summer Session.

Dr. Esther Lloyd-Jones addressed the Southern Self-Government Association April 17 on the subject of "Practical Applications of Student Government." On April 25 and 26 she attended the meeting of the American Council on Education in Trenton, N. J., reporting on the investigations of the Committee of Five which is carrying on a survey of character traits.

COLLEGE INSTRUCTION AND ADMINISTRATION

In accordance with a plan announced in the recent annual report of Dean William F. Russell, Professor Donald P. Cottrell has been granted a leave of absence for the academic year 1930-31 to travel in Europe, visiting universities and higher schools for the purpose of studying their organization, administration, and educational work.

Dr. F. B. O'Rear addressed the American Association of Collegiate Registrars at their annual meeting in Memphis, Tenn., on April 16. The subject discussed was "Possible Contents of a Handbook for Registrars."

Visiting Professor Thomas E. Benner is serving on the staff organized by the Federal Office of Education to survey higher education in Oregon for the Oregon State Board for Higher Curricula. Professor Benner was in Washington, D. C., at the Federal Office of Education during April and is to be in Oregon during May. The survey is under the general direction of Dr. Arthur J. Klein, Chief of the Division of Higher Education of the Federal Office.

Professor Donald P. Cottrell was in attendance at meetings of the North Central Association of Colleges and Secondary Schools, and at those of the newly launched Liberal Arts College Movement held at the Stevens Hotel in Chicago on March 19 to 21.

Dr. F. B. O'Rear made a trip to the University of Maine on April 3 in connection with the study of higher education in Maine which is being carried on throughout the present academic year. It is expected that the survey will be completed on or about June 1.

Visiting Professor Thomas E. Benner spoke on "The College or University Public Relations Officer" at the April 19 session of the annual convention of the American Association of Collegiate News Bureaus, held in New York City, April 17 to 19.

Mr. R. E. Lambert, formerly secretary of the Washington Square College of New York University, and Mr. M. R. Chauncey, on leave from Oklahoma A. and M. College where he is associate professor of education, both graduate students in the field of higher education and candidates for the Ph.D. degree, were invited by Professor Cora M. Winchell to meet with the student group in education HT52 on March 26 to discuss the general topic, "Household Arts in Normal Schools and Colleges."

The students in the courses in College Instruction and Administration have organized the Higher Education Club

which held its first meeting in the Grace Dodge Room on the evening of March 27. The officers of the new club are: president, William J. Williams, who is on leave from the chairmanship of the department of education of Baker University, Baldwin City, Kans.; vice-president, Miss Wylle B. McNeale, who is on leave from her position as chief of the division of home economics at the University of Minnesota; secretary-treasurer, Miss Dorothea A. Daniels, formerly director of nurses at Barnert Hospital, Paterson, N. J. The faculty adviser of the club is Professor Donald P. Cottrell.

ENGLISH

Professor Elizabeth C. Cook expects to spend the summer in England, studying backgrounds of English fiction, and attending summer lectures at Oxford University.

FOODS AND COOKERY

A commercial demonstration on cake making was given on March 21 by Miss Eleanor Howe to Mrs. Lilian Gunn's topical course in the Use of Demonstration in Cookery Teaching. Miss Howe, who is a former student in this department, represents McCormick and Company of Baltimore.

Mrs. Gunn gave a demonstration on table service before the Home Makers Forum at the Consolidated Gas Company of New York, on March 27.

FINE ARTS

In the series of exhibits which the department is holding in one of the studios this year was an interesting showing of the work of the class in Creative Design. This included designs for wallpaper, silks, chintzes, panels, etc., as well as a large collection of linoleum-block printed fabrics.

During the first two weeks in April the exhibit shown was a selection of colorful and delightful pastels, water-colors and printed textiles by Mrs. Eva Bernstein. Mrs. Bernstein is a former student of the department and has exhibited in many galleries both in New York City and throughout the United States.

The Bureau of Publications has recently published the McAdory Art Test by Dr. Margaret McAdory. The test provides an objective measure of individual and group judgment of artistic merit and serves as an effective teaching aid in elementary, high school, and college classes. It is also of value to the producer and to the customer.

In the passing of Mrs. Julia Hill Atwell, on March 24, the department lost one of its most devoted friends. As Miss Julia Hill she received her degree of B.S. from Teachers College. In addition to holding responsible positions in other universities, she returned here to conduct the advanced design courses, during sixteen summer sessions from 1912 to 1927. At the time of her death she was professor and director of the department of fine and applied arts of The Texas State College for Women, at Denton.

GUIDANCE AND PERSONNEL

The Teachers College Branch of the National Vocational Guidance Associa-

tion met in conjunction with the New York City Branch at a dinner meeting on April 10 at the new Sloane House of the Y. M. C. A. A tour of inspection of the building was made, and an explanation of the all-round guidance which this new center is rendering to young men was given by Mr. Jerome H. Bentley, Activities Secretary of the Y. M. C. A. of New York City.

A committee from the Teachers College Branch of the National Vocational Guidance Association, under the chairmanship of Lucile Sasse, is making plans for the "Vocational Guidance Follies of 1930" which will be presented some time in May.

Two new unit courses were offered the second semester—a course in Vocational Guidance for Cardiacs was given in conjunction with Cardiac Vocational Guidance Service of the New York Tuberculosis and Health Association. Lecturers were furnished by the Association under the leadership of Miss Margaret Brown, Director. The enrollment totaled 35.

The second course, Vocational Guidance for the Deaf and Hard of Hearing, was offered as part of a larger course in the Educational Problems of the Deaf and Hard of Hearing.

Professor Harry D. Kitson recently gave two addresses in Long Island villages on vocational guidance; one before the Parent-Teacher Association of Forest Hills and one before the teachers of the Freeport Public Schools.

Professor Kitson visited Minneapolis, Minn., in connection with a community conference looking toward securing community support for vocational guidance. He addressed employers, educators, and leaders of social agencies of the city. On April 21 he addressed the student body of the University of Minnesota.

On April 23 Professor Kitson assisted in a series of community conferences on vocational guidance at Alliance, Ohio.

HEALTH AND PHYSICAL EDUCATION

Professor Thomas D. Wood conducted a conference of the Committee on the School Child of which he is chairman. This is a committee of the White House Conference on Child Health and Protection. The conference was held in Washington, D. C., on February 28 and March 1.

Professor Jesse F. Williams gave an address on March 14 before the Southern Section of the American Physical Education Association at Birmingham, Ala. The title of the address was "Abiding Values in Physical Education." Professor Williams gave a series of three talks on "Health" to the Newark Teaching Corps on February 17, March 3, and March 10.

Dr. Clifford L. Brownell attended the White House Conference at Washington, D. C., on February 27 to March 1. This section, of which Professor Thomas D. Wood is chairman, pertains to the health of the school child.

Miss Norma Schwendener and eight students visited Smith College and Mount Holyoke on March 15 to study the plant and administrative set-up of the physical education departments.

Miss Schwendener gave an address before the Eastern Association of College Directors at Baltimore on April 11. The title of her talk was "Educational Method in Physical Education."

The National Convention of the American Physical Education Association was held in Boston, April 1-5. Members of the Department participated in the meetings as follows:

Professor Jesse F. Williams gave an address on Friday, April 4, on "The Importance of Teacher Training." He also presided at the Third General Session of the Convention. On Saturday morning Professor Williams addressed the students at a general session.

Dr. Brownell spoke before the Public School section on April 3. His talk was "Standards in School Health and Physical Education."

Mr. Roland H. Cobb delivered a paper before the Teacher Training Section on "A Study of the Professional Curriculum in College and University."

Miss Norma Schwendener gave a demonstration of natural activities with a special group of students from the professional schools in Boston.

Miss Mary Jo Shelly gave a talk before the Section for Directors of Physical Education for Women in Colleges on "The Dance and Related Educational Projects." Miss Helen Coops was the discussion leader of this section.

HISTORY

Six students, forming two delegations, attended the Model Assembly of the League of Nations staged by Lafayette College, Easton, Pa., April 25-26. The Teachers College delegations worked up special problems to present and coöperated closely in giving the pageant.

HOUSEHOLD ARTS EDUCATION

Professors Anna M. Cooley and Cora M. Winchell attended the meeting of the Department of Superintendence in Atlantic City February 22-27. On Monday and Tuesday, February 24 and 25, they attended the conference of Teachers and Supervisors of Home Economics.

Professor Winchell attended the meeting of the Advisory Committee on Child Development and Parent Education of the American Home Economics Association held on Tuesday, March 25.

The class in "Reorganization of Home Economics Curricula" is fortunate in the opportunity to coöperate with the schools of Hartford, Conn., in the study of the needs of a specific community. Through the invitation of Mr. Fred D. Wish, Jr., Superintendent of Schools, the class is making a study of the situation. Professor Winchell and Miss Goldberg, who has been appointed as supervisor of clothing in the elementary schools, spent March 18 and 19 in Hartford conferring with members of the Board of Education, school principals, the director of vocational education, supervisors and teachers of home economics, an adviser of girls, and a vocational adviser.

School visits, under the guidance of principals, proved very helpful. A program of special significance from the standpoint of health and home life content as an integral part of the school curriculum is that in the open-air school, where Miss Readett is the principal.

Mr. Wish has coöperated whole-

heartedly, meeting with the students for a two-hour period at Teachers College, and presenting the situation from the point of view of the superintendent.

HOUSEHOLD ECONOMICS

The Domestic Circle, organized by Miss Grace H. Dodge as a young woman's club in the early history of Teachers College, held its fortieth annual meeting at Teachers College, March 20, and was addressed by Professor Benjamin R. Andrews, who told the group of the field course in home economics given under his direction in England last summer by Teachers College. This group still retains fifteen of its original members and the annual meeting at the College is always looked forward to by these ladies whose organization is an interesting index of the wide interests of Miss Dodge and of their unabated loyalty to her memory. A message was read from Professor May B. Van Arsdale, written in Rome, especially for the meeting.

HOUSEHOLD ENGINEERING

The American Gas Association will coöperate with the household engineering department during the first three weeks of the Summer Session in two courses on "Heat and Household Heat Appliances." The National Electric Light Association will coöperate, during the last three weeks, in two courses on "Electricity and Household Electrical Appliances." Particulars may be had by writing to Professor C. J. Lynde.

KINDERGARTEN-FIRST-GRADE

Professor Patty Hill lectured at the Hebrew University on Mt. Scopus, Jerusalem, February 26, on "Changing Conceptions in the Education of the Young Child in America." Professor Hill's remarks, which were translated into Hebrew, were very well received by the large number of teachers and students of education present.

Among her hearers were nine former students at Teachers College, including Dr. I. B. Berkson, Director of Education of the Palestine Zionist Executive.

LIBRARY

Professor Eleanor M. Witmer spoke before a group of educators during Schoolmen's Week, April 2-5, in Philadelphia, on the subject of "Constructing the Library Curriculum in Elementary and Secondary Schools."

MATHEMATICS

Professor George W. Mullins of Barnard College spoke to the Teachers College Mathematics Club on Thursday evening, March 20. The subject of his talk was "Graphic Methods in Teaching Mathematics."

Mr. Hamley spoke to the mathematics teachers of Section 19 of the New York Society for the Experimental Study of Education on March 15, at their regular dinner meeting. His topic was "Functional Relationships and Culture in Mathematics."

Professor W. D. Reeve spoke to the students of the Municipal Training School of New York City in Assembly on March 26. His topic was "The Universality of Mathematics."

Professor Reeve spoke to the mathematics teachers at Schoolmen's Week at

the University of Pennsylvania on Thursday afternoon, April 3. His topic was "Recent Tendencies in Teaching Mathematics." Professor Reeve also spoke to the students of Hood College at Frederick, Md., on Friday, April 11, on "Other Worlds Than Ours."

MUSIC EDUCATION

Professor Miles A. Dresskell, Dr. Edwin J. Stringham, and Professor Peter W. Dykema attended the National Music Supervisors Conference in Chicago. Dr. Stringham delivered an address on a balanced music program, and Professor Dykema spoke on the training of music teachers with special relation to the need of administrative and teaching ability, and gave suggestions as to how to guarantee these. Professor Dykema also presided at the second general session and Professor Harold Rugg gave an address on musical education and the development of personality.

At the Teachers College luncheon in Chicago, which was attended by almost one hundred guests, Mr. John A. Neff, director of music at the State Teachers College, Indiana, Pa., presented to Professor Dykema an envelope containing the beginnings of a thousand dollar loan fund to be used to aid music students in Teachers College. Alumni are urged to contribute to this fund and may send their contributions to either Mr. Neff or Professor Dykema.

Mr. Glenn Gildersleeve, who has been on the Music Education staff at Teachers College for five years, will sever his connections at the end of the Summer Session and will enter at once upon his duties as state director of music for Delaware with headquarters at Dover.

At the special Easter chapel held just before the spring holidays the combined glee clubs of men and women under the direction of Mr. Herbert T. Norris presented "The Crucifixion" by Stainer.

On April 8 the Sigma Alpha Iota organization of the women in the Music Education department presented the fifth of a series of informal musicales in the Grace Dodge social room.

A series of music tests which parallel and extend the Seashore Tests have been devised by Professor Jacob Kwalwasser of Syracuse University and Professor Peter W. Dykema of Teachers College. These have been prepared by the Victor Company and are now available.

NORMAL SCHOOL EDUCATION

On the evening of April 24 Professor W. C. Bagley delivered a talk on "Scientific Bases of Education" in connection with the Philadelphia Schoolmen's Week.

Professor Bagley is to address the Model Teachers' Association of the New York City Training Schools on May 12 and in Baltimore on May 20 he will speak before the teachers of that city.

Professor E. S. Evenden was one of the speakers at the State Education Conference held in Salt Lake City on April 4 and 5, delivering seven talks in the two days. He addressed the faculty of Harris Teachers College in St. Louis, Mo., on April 7. He then visited the Eastern Kentucky State Teachers College for the purpose of inspecting the

physical plant. He addressed the Educational Conference held at the University of Pittsburgh, Pittsburgh, Pa., on April 11.

Dr. R. E. Crump, a former student in this department, has been elected acting president of Baptist University, Shawnee, Okla.

Mr. W. D. Ellis, associate in normal school education this year and on leave of absence from the principalship of the Richmond City Normal School, has been elected president of the City Training School Department of the National Edution Association.

Miss Marion E. Macdonald (Ph.D., 1930), a member of the faculty of Jamaica Training School for Teachers, and Associate in normal school education for the past eight summers, is the author of *Practical Statistics for Teachers* published by The Macmillan Company during April.

NUTRITION

Professor H. C. Sherman delivered a series of four lectures on recent advances in the chemistry of nutrition at the School of Tropical Medicine, San Juan, Porto Rico, during the last two weeks of February. While there, Professor Sherman had opportunity to investigate nutrition conditions on the island.

Professor Sherman, on March 28, addressed the Eastern New York Section of the American Chemical Society, meeting in Albany, N. Y., on "Some Recent Advances in the Chemistry of Nutrition."

During the winter and spring Professor Mary Swartz Rose addressed meetings as follows: The New York State Teachers Association Meeting in Rochester, N. Y., on "Up-to-Date Findings in Nutrition and the Teaching of Nutrition"; The Greater New York and Southeastern New York Home Economics Associations, in New York City, on "The True and False in Nutrition"; the nutrition teachers and nurses of Newark, N. J., public schools on "Nutrition"; the Washington, D. C., Dairy Council on "Present Trends of Education in Nutrition and Health"; and the Teacher Health Counselors of New York City in a course in health education given by Dr. Frances Cohen at the College of the City of New York on "The Teaching of Nutrition."

In the March of Events radio program directed by the Women's City Club of New York City, Professor Rose spoke on February 28 over WEAF and an NBC coast-to-coast hookup on the subject "Food and Health."

An interesting and significant result of the nutrition teaching which the students in Nutrition 210 have been doing the past few years in Public School No. 157 was the request from some of the grade teachers of the school last fall for an extra-mural course in elementary nutrition to be given in the school. In response to this request, Professor Rose, during the past winter, gave such a course for a group of seventeen or eighteen of the teachers at the school on Thursday afternoons immediately following the close of the afternoon session.

The Bureau of Publications of Teachers College has just published Child De-

velopment Monograph No. 2, *The Relation of Diet to Health and Growth of Children in Institutions,* by Mary Swartz Rose and Cora E. Gray, with the collaboration of Katherine L. Foster. The book bears the subtitle "With a Method of Evaluating Dietaries and a Three-Weeks Dietary Conforming to the Standard Proposed."

The Heckscher Foundation has recently established the Heckscher Institute for Child Health with Dr. I. Newton Kugelmass, director. Professor Rose is chief of the nutrition clinic in the Institute and has Dr. Marie Muhlfeld as assistant.

Professors H. C. Sherman and Grace MacLeod were among the speakers at the New York Conference with which the American Telephone and Telegraph Company launched its new course in Nutrition and Health for its employees. Miss Helen Stacey, who took her Master's degree in this department last year, is director of the course.

Professor MacLeod addressed meetings during the winter and spring as follows: the Home Economics Section of the Hampden County Teachers Association in Springfield, Mass., on "Recent Advances in Nutrition"; the Home Making Center Forum at the Grand Central Palace, New York City, on "Family Health through Nutrition"; the Bell Laboratories Club, New York City, on "Food and Health"; the New England Health Institute, Boston, Mass., on "Common Faults of the American Family Dietary."

Miss Clara Taylor took part in the recent health campaign of the Women's Club in school districts 51 and 52, Queens, New York City, by giving a talk on "Nutrition and Health."

At the Home Making Center, Grand Central Palace, New York City, Miss Taylor was one of the speakers in the opening sessions of a course in home preparedness for brides and near-brides. Her topic was "Health Through Nutrition."

At an institute of the Hudson Valley League for Nursing Education held in Troy, N. Y., Miss Taylor addressed one of the sessions on "The Relation of Normal Diet to Feeding the Sick."

PHILOSOPHY OF EDUCATION

Professor Wm. H. Kilpatrick spent March 13 in Rochester, N. Y., speaking twice to the public school teachers. He spent March 25 at the Y. M. C. A. College in Springfield, Mass., leading a series of discussions on religious education in connection with their Orientation Week program. On April 3 he spoke to the Physical Education Association meeting in Boston.

Dr. George S. Counts met with the Philosophy Club on March 12 and discussed with them the present situation in Russia, with special reference to the Five-Year Plan. Dr. Horace Kallen will be the speaker at the next meeting.

SECONDARY EDUCATION

Professor Thomas R. Briggs's Inglis lecture, "The Great Investment," which was published early in March by the Harvard University Press, went into a second edition before the end of the month. By vote of the Secondary

Group the lecture was the subject of discussion at the April meeting.

On March 12 Professor Briggs spoke to the Administrative Council and to the entire teaching staff in Baltimore.

Mr. Hatcher Hughes, playwright and dramatic critic, appeared before the Secondary Club on Tuesday, March 25. He discussed current dramatic productions of New York City.

Professor P. M. Symonds has accepted membership on two subcommittees—one on Health Education in Elementary Schools and the other on Physical Education in Schools—of the section on the School Child of the White House Conference on Child Health and Protection.

TEXTILES AND CLOTHING

Miss Jane Fales, formerly director of the department of Textiles and Clothing, died on March 8 in New York City after an illness of several months.

Professor Mary Evans gave a talk April 1 on color in costume before the members of the Mothers Club in St. Cyprian's Parish House, New York City.

BUREAU OF EDUCATIONAL SERVICE

Recent changes in position of Teachers College Alumni are reported by the Bureau of Educational Service:

Amerise, Julia, from dietitian, West Philadelphia Hospital for Women, Philadelphia, Pa., to dietitian, Pennsylvania Hospital, Philadelphia, Pa.

Brown, Mazie, from substitute teacher in the grades, Public Schools, New York City, to teacher of sewing, State College for Colored Students, Dover, Del.

Carlsson, Victoria, from household arts instructor, Teachers College, Columbia University, to associate professor of nutrition and hygiene, North Carolina College for Women, Greensboro, N. C.

Chisholm, Alice E., from teacher of geography and history, Junior High School, Chisholm, Minn., to teacher of English, High School, Great Neck, N. Y.

Florer, Alice, to primary critic, Creston Junior College, Creston, Iowa.

Frary, Rodney W., from professor of mathematics, Alfred College, Alfred, N. Y., to professor of mathematics, New York City College, New York City.

Garris, Mrs. Sarah, from teacher of English, Penn Hall, Chambersburg, Pa., to critic teacher of English, Central State Normal School, Mount Pleasant, Mich.

Gildersleeve, Glenn, from assistant in the music department, Teachers College, Columbia University, New York City, to director of music, Public Schools, State of Delaware, Dover, Del.

Gill, Ruth, from supervisor of practice house, State Teachers College, Buffalo, N. Y., to teacher of home economics, Lingnan University, Canton, China.

Goodsell, Evelyn, D., from teacher of music in the grades, Public Schools, Spokane, Wash., to teacher of music, Flandreau High School, Pierre, S. D.

Hastings, Helen, from teacher of English, High School, Middletown, Conn., to dean of girls, High School, Middletown, Conn.

Hopf, John, teacher of history and science, Public Schools, Hasbrouck, N. J.

Jones, Mrs. L. L., appointed instruc-

tor in household technology, Syracuse University, Syracuse, N. Y.

Keliher, Alice V., research assistant, Child Study, Yale Psycho Clinic, New Haven, Conn.

Koch, Oscar, from instructor in history, Chicago Normal School, Chicago, Ill., to principal, Washington Irving High School, Tarrytown, N. Y.

MacFaddin, John W., from teacher of music, University of West Virginia, Wheeling, W. Va., to assistant music director, State of Delaware, Dover, Del.

Mornan, Ruby, from teacher of psychology, pedagogy, and English, Bethlehem Training College, Malvern, Jamaica, B. W. I., to teacher of English, Happy Grove School, Friends Mission Hectors River, Jamaica, B. W. I.

Pittman, Blanche, from principal, All Saints School, Sioux Falls, S. D., to principal, St. Agnes School, Albany, N. Y.

Ranslem, Annabelle, from teacher of commercial subjects, High School, West Point, Neb., to instructor in health and physical education, State Normal School, Fredonia, N. Y.

Schumann, Dorothy, from part-time assistant in household arts, Teachers College, Columbia University, to teacher of cooking, Vassar College, Poughkeepsie, N. Y.

Shapcott, Edith, from demonstrator, Food Crafts Shops, New York City, to nutritionist and dietitian, Home Making Center, New York City.

Smart, Thomas J., from specialist in rural teacher training, Bureau of Education, Washington, D. C., to rural supervisor, State Board of Education, Hartford, Conn.

Stem, Margaret, from assistant supervisor special classes, Public Schools, Grand Rapids, Mich., to assistant supervisor of special education, Baltimore, Md.

Steward, Zella, from teacher of science, State Normal School, Towson, Md., to instructor of science, East Tennessee State Teachers College, Johnson City, Tenn.

Twitchell, Mrs. Helen, from substitute, fourth through eighth grades, Public School, Bellows, Falls, Vt., to third, fourth and fifth grades at the MacDuffie School for Girls, Springfield, Mass.

Tyler, Henry T., from chairman of psychology, Teachers College, Indianapolis, Ind., to instructor in psychology, Sacramento Junior College, Sacramento, Calif.

Veech, Agnes Reid, from instructor in nutrition work, East Harlem Nursing and Health Service, New York City, to teacher of science, Public Schools, Louisville, Ky.

Whitchurch, Louise, from teacher of sewing and textiles, Harrisburg Township High School, Harrisburg, Ill., to teacher of sewing, High School, New Brunswick, N. J.

Whitten, Martha, from teacher of clothing and crafts, Taft Union High School, Taft, Calif., to specialist in home decoration, Cornell University, Ithaca, N. Y.

ALUMNI NOTES

TEACHERS COLLEGE ALUMNI ASSOCIATION OFFICERS

President: Dr. J. CAYCE MORRISON, Assistant Commissioner for Elementary Education, New York State Department of Education, Albany, N. Y.
First Vice-President: Dr. FANNIE W. DUNN, Assistant Professor of Education, Teachers College.
Second Vice-President: Dr. VELDA C. BAMESBERGER, Director of Elementary Education, Board of Education, Toledo, Ohio.
Recording Secretary: Miss MARY LEWIS, Teacher in Horace Mann School, Teachers College.
Corresponding Secretary: Miss KATHERINE I. SHERWIN, Executive Secretary of Student Organizations, Teachers College.
Treasurer: Mr. CLYDE R. MILLER, Director, Bureau of Educational Service, Teachers College.
Members-at-Large: Mr. FRANK MOREY, Supervising Principal of Schools, Camp Hill, Pa.
Miss EFFIE TAYLOR, Professor of Psychiatric Nursing, School of Nursing, Yale University, New Haven, Conn.
Miss MARION SHERIDAN, 711 Orange Street, New Haven, Conn.
Alumni Trustees:
Dean M. G. NEALE, School of Education, University of Missouri, Columbia, Mo.
Miss ANNA E. RICHARDSON, Field Worker for American Home Economics Association, 617 Mills Building, Washington, D. C.
Alumni Office: Teachers College, 525 West 120th Street, New York City.

Address all communications to Katherine I. Sherwin,
Corresponding Secretary, Teachers College, New York City.

Martha E. Dresslar (M. S. 1918) is assistant professor of home economics, University of Washington, Seattle, Wash.

Ruth Margaret Lusby (A. M. 1920) is head of the department of institutional administration, Division of Home Economics, and director of Memorial Union, Iowa State College, Ames, Iowa.

Louisa H. Lawton (B. S. 1916, A. M. 1929), who has been for thirteen years director of industrial arts, The Park School of Buffalo, has become head of the industrial arts department at the Ballard Memorial School, Louisville, Ky.

Frances M. Hedden (A. M. 1920) is serving as associate general secretary of the New Jersey Council of Religious Education with headquarters at Newark, N. J. Special interests center about the child in Sunday, weekday, and vacation sessions of the Church School.

Helen M. Carter (A. M. 1924) formerly associate professor of home economics, Louisiana State University, Baton Rouge, La., was recently appointed head of the home economics department at the same university.

Mrs. Elma H. Benton (A. M. 1918) is completing her eleventh year as head mistress of Hosmer Hall, St. Louis, Mo., a day school for girls. During the past year the capacity of the school has been greatly enlarged by an additional building.

Clara P. Reynolds (Summer Session 1919-20) is taking a year's sabbatical leave in Europe, beginning about June 1. She will study in Vienna and travel

through different countries emphasizing design in peasant craft and in modern industrial arts, starting with the Industrial Arts Exhibit at Stockholm. She will return to Teachers College for the Summer Session of 1931.

Stella Elizabeth Steele (A. M. 1913) is associate professor of household science, Georgia State College for Women, Milledgeville, Ga.

Lillian E. Rogers (B. S. 1912) is principal of Friends' West Philadelphia School, a very progressive elementary school in a congested neighborhood. It was one of the first schools to join the Progressive Association.

Ada Beazley (Summer Session 1901-2) is manager of Reed Farm Convalescent Home for Mothers and Children, Valley Cottage, N. Y., Martine Farm Cardiac Convalescent Home (children), White Plains, N. Y., and Nichols Cottage (cardiac boys).

M. Channing Wagner (A. M. 1923) is assistant superintendent in charge of secondary education and research in the Wilmington public school system, Wilmington, Del.

Helen Baylis (Summer Session 1928-29) of Wilmington (Del.) High School has been promoted to the position of guidance director of the secondary schools of the Wilmington public school system and assistant to the director of research.

Frederick G. Williams (A. M. 1928) and his wife Irene Hays Williams (A. M. 1928) are in charge of an experimental school for Bengali children, Ushagram, Asansol, India.

Mary Katherine Kerwien (B. S. 1921, A. M. 1929) is supervisor of fine arts, Union City, N. J.

Chas. W. Henry (A. M. 1928) is associate headmaster of the McCallie School, Chattanooga, Tenn.

Adah H. Hess (B. S. 1915) has been state supervisor of home economics education, Illinois, since 1921 and has been president of the Illinois Home Economics Association since 1928.

Thomas J. Durell (Summer Session 1927-29) is county superintendent of schools, Cape May County, N. J., and has just completed in collaboration with Fletcher Durell and Harry O. Gillet, principal of the University of Chicago Elementary School, *The New Day Arithmetics*, a three-book series of arithmetics for Grades 3 to 8, inclusive, published by Charles E. Merrill Company.

Katherine M. Denworth (Ph. D. 1927) is president of Bradford Academy, Bradford, Mass. Dorothea Beach (A. M. 1921) is in the department of household arts and homemaking; Catherine Curtis (A. M. 1929) is registrar and teacher of mathematics; Edna Postlethwaite (A. M. 1922) is also a teacher of mathematics, and Nora Neill Power (A. M. 1928) is dean of women at Bradford Academy.

Chas. F. Allen (A. M. 1924), now supervising secondary education, Little Rock, Ark., will teach at State Teachers College, Buffalo, N. Y., next summer. He was responsible for the January issue of the *Junior-Senior High School Clearing House*; and article entitled "Pupil Difficulties in Junior High Schools" in the February issue of *School Life*; joint author (Roemer and Allen) of *Readings in Extra-Curricular Activities and A Syllabus in Extra-Curricular Activities* (Roemer and Allen) published by the Johnson Publishing Company last June. He is now completing the Allen and Murphy Language Workbook Series through Junior and Senior High Schools.

Homer F. Barnes (S. S. 1923) of Western Reserve Academy, Hudson,

Ohio, has accepted a position at the Kamehameha schools at Honolulu, Hawaii.

C. O. Mathews (Ph. D. 1927) is to teach courses in mental testing and educational psychology in the School of Education, University of North Carolina, Chapel Hill, N. C., during the summer of 1930. He writes that eight members of a class in educational measurements under his direction recently made a mental and educational survey of pupils in Ashley, Ohio, public schools.

Margaret L. Pettigrew (B. S. 1927) is director of physical education for girls, Hatch Junior High School, Camden, N. J.

Alonzo E. Myers (A. M. 1924, Ph. D. 1927), director of the division of teacher preparation of the state board of education, Hartford, Conn., has accepted a professorship at New York University, New York City, effective next fall. He will be professor of teachers college and normal school education.

Albert Barrett Meredith (Summer School 1900-11), formerly alumni trustee of Teachers College, Columbia University, and since 1920 state commissioner of education, Hartford, Conn., has accepted for September the position of professor of educational administration in the school of education of New York University, New York City. He will be head of the department in the graduate division of that school.

Anna Mary Snyder (B.S. 1915, A.M. 1920) is teaching science in the South Philadelphia High School for Girls, Philadelphia, Pa.

Announcing

A GENERAL SCIENCE WORKBOOK

Lake—Welton—Adell

Furnishes an accurate, reliable measure of achievement in General Science.

Thoroughly tested in the classroom before publication.

Consists of sixteen units covering every important phase of the subject usually included in the General Science course.

For use with any textbook wherever the subject of General Science is taught.

SILVER, BURDETT AND COMPANY

New York Newark
Boston Chicago
San Francisco

Ready for distribution

A HISTORY OF WOMEN'S EDUCATION IN THE UNITED STATES

By

THOMAS WOODY

Professor of the History of Education, University of Pennsylvania

"While we have modern histories, political, philosophical and educational histories, we still lack one that duly takes into view the education of women."

These volumes are designed to fill this gap in our social history.

Two volumes. 1338 pages. Price $10.00.
Many rare documents never before reproduced.

THE SCIENCE PRESS

Grand Central Terminal
NEW YORK, N. Y.

Lime and Green Streets
LANCASTER, PA.

Recent Publications

A STUDY OF BIOLOGY NOTEBOOK WORK IN NEW YORK STATE. By Don C. Baird, Ph.D. 118 pp. Cloth, $1.50.

QUALITIES ASSOCIATED WITH LEADERSHIP IN THE EXTRA-CURRICULAR ACTIVITIES OF THE HIGH SCHOOL. By George G. Bellingrath, Ph.D. 57 pp. Cloth, $1.50.

A DEVELOPMENT OF A STATE SCHOOL SYSTEM: NEW HAMPSHIRE. By Eugene Alfred Bishop, Ph.D. 106 pp. Cloth, $1.50.

SCHOOL PROVISION FOR INDIVIDUAL DIFFERENCES: POLICIES AND DATA NECESSARY. By Knute O. Broady, Ph.D. 101 pp. Cloth, $1.50.

CITY SCHOOL SURVEYS: AN INTERPRETATION AND APPRAISAL. By Hollis Leland Caswell, Ph.D. 130 pp. Cloth, $1.50.

TRAINING IN HIGH-SCHOOL MATHEMATICS ESSENTIAL FOR SUCCESS IN CERTAIN COLLEGE SUBJECTS. Allan Ray Congdon, Ph.D. 102 pp. Cloth, $1.50.

WHAT TO TELL THE PEOPLE ABOUT THE PUBLIC SCHOOLS: A Study of the Content of the Public School Publicity Program. By Belmont Mercer Farley, Ph.D. 136 pp. Cloth, $1.75.

ARITHMETIC PROBLEM SOLVING. By Paul R. Hanna, Ph.D. 68 pp. Paper, $1.00.

SOME FACTORS INFLUENCING PARTICIPATION IN VOLUNTARY SCHOOL GROUP ACTIVITIES. A Case Study of One High School. By Wayland J. Hayes, Ph.D. 82 pp. Cloth, $1.50.

LEARNING LEVELS OF THE CHILDREN IN THE NURSERY SCHOOL: With Reference to the Eating Situation. By Adelene Bruce Hill and Dorothy Van Alstyne. 48 pp. Boards, $1.00.

PREDICTION OF SUCCESS IN PROFESSIONAL COURSES FOR TEACHERS. By Laura B. M. Krieger, Ph.D. 76 pp. Cloth, $1.50.

THE USE OF PRACTICE IN THE TEACHING OF CAPITALIZATION AND PUNCTUATION. By John Paul Leonard, Ph.D. 79 pp. Cloth, $1.50.

SAFEGUARDING SCHOOL FUNDS. By Henry H. Linn, Ph.D. 187 pp. Cloth, $1.75.

BUREAU OF PUBLICATIONS
TEACHERS COLLEGE, COLUMBIA UNIVERSITY
NEW YORK CITY

Recent Publications

THE IDEA OF GOD IN PROTESTANT RELIGIOUS EDUCATION. By Angus Hector MacLean, Ph.D. 150 pp. Cloth, $1.50.

A STUDY OF THE STUDENT HOMES OF CHINA. By Ava B. Milan. 98 pp. Cloth, $1.50.

THE SINGLE SALARY SCHEDULE: An Analysis and Evaluation. By Lyle L. Morris, Ph.D. 79 pp. Cloth, $1.50.

A STUDY OF THE EFFECT OF THE INTEREST OF A PASSAGE ON LEARNING VOCABULARY. By Harriet Eastabrooks O'Shea, Ph.D. 122 pp. Cloth, $1.50.

PERSONAL HYGIENE FOR COLLEGE STUDENTS. By Delbert Oberteuffer, Ph.D. 121 pp. Cloth, $1.50.

A STUDY OF PROBLEM MATERIAL IN HIGH SCHOOL ALGEBRA. By Jesse Jerome Powell, Ph.D. 120 pp. Cloth, $1.50.

THE FUTURE OF INTERSCHOLASTIC ATHLETICS. By Frederick Rand Rogers. 137 pp. Cloth, $1.90.

THE RELATION OF DIET TO HEALTH AND GROWTH OF CHILDREN IN INSTITUTIONS: With a Method of Evaluating Dietaries. By Mary S. Rose and Cora E. Gray. 113 pp. Cloth, $1.35.

PROBLEMS OF THE CITY SCHOOL SUPERINTENDENT IN THE FIELD OF ARITHMETIC. By Clarence A. Rubado, Ph.D. 107 pp. Cloth, $1.50.

PHYSICAL EDUCATION FACILITIES FOR THE PUBLIC ACCREDITED HIGH SCHOOLS OF ALABAMA. By Jackson R. Sharman, Ph.D. 78 pp. Cloth, $1.50.

EDUCATION AND THE SUMMER CAMP: AN EXPERIMENT. By Lloyd Burgess Sharp, Ph.D. 114 pp. Cloth, $1.50.

THE EQUIPMENT OF THE SCHOOL THEATER. By Milton Smith, Ph.D. 78 pp. Cloth, $1.50.

BUREAU OF PUBLICATIONS
TEACHERS COLLEGE, COLUMBIA UNIVERSITY
NEW YORK CITY

Now a Complete Two-Year Course

LATIN I (For the First Year) 554 pages Price, $1.40
LATIN II (For the Second Year) 653 pages Price, $1.72

By **Pearson, Lawrence,** *and* **Raynor**

IN THESE books the teaching of Latin in the first two years in the high school has been simplified, vitalized, and thoroughly reorganized in accordance with the recommendations of the Classical Investigation. The more difficult forms and principles have been postponed to the third semester at the beginning of the second year. Throughout, an unusual effort has been made to give a historical-cultural background, to show the relation between Latin and English, and to provide the pupil with a better preparation for, and a greater understanding of, the reading of Caesar. Both books are richly illustrated.

AMERICAN BOOK COMPANY
New York Cincinnati Chicago Boston Atlanta

WINSTON

CAESAR . . . A Dramatic Unit

The new Dunham's SECOND YEAR LATIN is an attractive, well-illustrated, eminently teachable and "alive" book. But above all it is distinguished for its unique organization of the text of CAESAR. The narrative is continuous. By the use of English summaries and by placing the extraneous incident at the back of the book, the author makes it possible for even a fairly good class to read through the Siege of Alesia. CAESAR becomes a dramatic unit, with a beginning, a middle, and an end. It is, in short, a story—easier to read and easier to remember. Examination copies on request to interested teachers.

THE JOHN C. WINSTON COMPANY
Winston Building Philadelphia

FOR TEXTBOOKS

THE J. M. HAHN TEACHERS AGENCY

A Western Placement Bureau
Elementary, Secondary, College

Always in quest of outstanding educators for important positions. Teachers with higher degrees in demand. *Doctors of Philosophy* urgently needed for college and university positions now listed.

J. M. HAHN and Blanche Tucker
Managers
2161 Shattuck Avenue
BERKELEY CALIFORNIA

FRENCH SUMMER SCHOOL

McGILL UNIVERSITY
MONTREAL, QUE.
June 26th to July 31st, 1930

Thoroughly French Atmosphere
Only French Spoken
Entirely French Staff,
Elementary, Intermediate and Advanced Courses.

MORNING—Lectures and Class Room Instruction,
AFTERNOON—Group Conversation, Sight-Seeing, Sports,
EVENING—Concerts, French Plays, Entertainments, Illustrated Lectures.

Write for Circular to the
Secretary, FRENCH SUMMER SCHOOL,
McGill University,
MONTREAL. QUE.

INTRODUCTORY COURSE IN PHILOSOPHY
(Syllabus)

By

W. P. MONTAGUE, PH.D.
Professor of Philosophy, Barnard College
Columbia University

and

HELEN HUSS PARKHURST, PH.D.
Assistant Professor of Philosophy, Barnard College
Columbia University

A new approach to Philosophical Study

Price 50 cents

A. G. SEILER, Publisher
1224 AMSTERDAM AVENUE, NEW YORK

Ready this spring

NEW EDUCATIONAL BOOKS

of importance to

TEACHERS ADMINISTRATORS

J. O. HASSLER *and* R. R. SMITH — THE TEACHING OF SECONDARY MATHEMATICS. A book which combines theory and practice in a specific and authoritative discussion of value to all who are interested in the teaching of mathematics in either the senior or junior high school.

MARION E. MACDONALD — PRACTICAL STATISTICS FOR TEACHERS. A practical treatment of the application of the simpler statistical techniques to ordinary educational problems. No mathematical background is presupposed.

DOUGLAS WAPLES *and* R. W. SMITH — RESEARCH METHODS AND TEACHERS' PROBLEMS. On how to apply the most productive types of research technique to actual classroom situations. The material in this text in mimeographed form has been used with great success during the past four years in teacher-training classes.

EDWARD H. REISNER — THE EVOLUTION OF THE COMMON SCHOOL. This is the story of popular education from the origin of the vernacular schools in the medieval towns of Europe down to the present day. It is a concentrated socialized history of the common school.

JOHN MERRILL *and* MARTHA FLEMMING — PLAY-MAKING AND PLAYS. A book which fills a long-felt need of the teacher, the playground supervisor, or anyone engaged in the direction of dramatics from the elementary grades up through the high school.

FRANK J. LOWTH — THE COUNTRY SCHOOL TEACHER AT WORK. Here are practical, concrete suggestions for the rural school teacher facing the day's work. The book is an excellent manual for reference or study.

WARD G. REEDER — THE FUNDAMENTALS OF PUBLIC SCHOOL ADMINISTRATION. This is a text for the introductory or general course in school administration in teachers colleges, normal schools and educational departments of colleges and universities. The emphasis is on local administration with particular regard to the problems of local school officials.

ROBERT H. LANE — WORKBOOK FOR PRINCIPALS AND SUPERVISORS. A practical, accurate and modern outline course in supervision which will be valuable in normal-school and teacher-training classes. It discusses "The Principal and His School," "Supervision in the Elementary School," and "Making and Interpreting the Course of Study."

THE MACMILLAN COMPANY

NEW YORK BOSTON CHICAGO ATLANTA DALLAS SAN FRANCISCO